



The Library of the
Wellcome Institute for
the History of Medicine

MEDICAL SOCIETY
OF
LONDON
DEPOSIT

Accession Number

Press Mark

ROLLO, J.

Author's presentation copy

*London. 1801. The author
resides.*

A SHORT ACCOUNT
OF THE
ROYAL ARTILLERY HOSPITAL
AT WOOLWICH:

WITH SOME
OBSERVATIONS
ON THE
MANAGEMENT OF ARTILLERY SOLDIERS,
RESPECTING THE PRESERVATION OF HEALTH.

ADDRESSED TO THE
OFFICERS OF THE REGIMENT,
AND DEDICATED TO
THE MASTER GENERAL AND BOARD OF ORDNANCE.

By JOHN ROLLO, M. D.
SURGEON GENERAL, ROYAL ARTILLERY, &c.

London:
PRINTED FOR J. MAWMAN, POULTRY.

1801.

By T. Gillet, Salisbury-Square.



DEDICATION.

THIS Account of the Royal Artillery Hospital at Woolwich, with the Observations on the Management of Artillery Soldiers under some of the most common circumstances producing their diseases, with the view of guarding against them, drawn up purposely for the information of the Officers of the Regiment, comprehending the various Regulations suggested by the Author at various times, which have been approved and adopted, for the improvement of the Medical Department, and bettering the condition of the sick, being likewise, agreeable to the Instructions of the Medical Board of the Army as
sanctioned

functioned by his Majesty in 1796; and the extended Instructions of the same Board in 1799, as ordered by His Royal Highness the Commander in Chief, are most respectfully dedicated to the Master General and Board of Ordnance.

CONTENTS.

CONTENTS.

	Page
ADDRESS to the Officers of the Royal Regiment of Artillery - -	1
A short account of the Royal Artillery Hospital at Woolwich. - - -	9
Of the Situation of the Hospital - -	ib.
Of the Nature and Structure of the Royal Artillery Hospital at Woolwich, and Out-buildings, with its adjoining Ground	12
Of the Nature and Structure of the Hospital and Convalescent Barrack - - -	13
Of the Nature and Structure of temporary and military Hospitals - - -	25
Of Buildings which may be constructed into temporary Hospitals, as met with in the Progress of an Army	26
Of Huts and Tents - -	30
Of the Portable Wooden Hospital -	32
Of Hospital Ships - - -	33
Of Hospital and wounded Waggon, and other Means for the occasional Conveyance of Sick - - - -	36
	Of

	Page
Of the œconomical Management of the Royal Artillery Hospital at Woolwich - -	41
Of the Furniture of the Hospital - -	42
----- Convalescent Barrack	47
Of the Management of the Patients in the Hos- pital - - -	48
Of the Patients Diet in the Hospital -	52
Of the Matron, Steward, Nurfses, and other Ser- vants of the Hospital - -	58
Of the Hospital Guard . -	60
Convalescent Barrack - -	62
Diet of the Men in Convalescent Barrack -	66
Of the Means employed in the Royal Artillery Hospital at Woolwich, to destroy Con- tagion and prevent its spreading, &c. -	68
Of Ventilation - - -	70
Of Cleanliness - - -	71
Of the Admission of Patients with Infectious Diseases - - -	72
Of the Manner of destroying Contagion and preventing its Formation, &c. -	73
Of the Medical Management of the Royalartil- lery Hospital at Woolwich - -	80
Of	Of

CONTENTS.

vii

Page

Of the Cadet Hospital	-	-	-	93
A—Surgeons Instructions	-	-	-	95
B—Additional Instructions	-	-	-	108
C—Form of Accounts on detached Services, where there is no Artillery or Ordnance Surgeon	-	-	-	113
D—Abstract of the Diseases in the Hospital at Woolwich for five Years, with remarks				114
E—Regulations of the Medical Library estab- lished in the Hospital	-	-	-	118
F—Extracts from the Regulations of the Medi- cal Board of the Army	-	-	-	122
Some Observations on the Management of Ar- tillery Soldiers under the most remarkable Causes of the Diseases to which they are liable to be exposed	-	-	-	131
Of the most general Causes of the Diseases of Soldiers	-	-	-	132
Intemperance and Irregularity	-	-	-	133
Exposure to Heat and Cold, with or without Moisture	-	-	-	136
Marsh Vapour	-	-	-	139
Contagion or Infection	-	-	-	140
External Injury	-	-	-	146
				Of

	Page
Of the most obvious Means of preventing the Diseases of Soldiers - -	ib.
Of obviating the Effects of Intemperance and Ir- regularity - - -	147
Of obviating the Effects of Heat and Cold, &c.	151
Of obviating the Effects of Marsh Vapour -	153
Of obviating the Effects of Contagion and In- fection - - -	155
Of obviating the Effects of external Injury	168
Books recommended to Officers, on Hospitals and Means of preserving the Health of Military Persons - -	172

CORRECTIONS.

Page	37	Line	9	dele "mere."
	66		4	for "and porridge," read "or porridge."
	69		11	"atmospheric" read "atmospherical,"
	74		20	"Cruickshanks" read "Cruickthank."
	85		15	"Medicine" read "Medicines."
	116		22	"Phagednic" read "Phagedenic."
	118		8	"Untility" read "Utility."
	121		21	"Colm" read "Coleman."
	ib.			to be added as presents to the Library, "Savigny's Plates, Fearon on Can- cers, and the last work of Doctor Chisholm."
134 & 135		14 & 4		for "dyfenteric" read "dyfenterical."

ADDRESS
TO
THE OFFICERS
OF

The Royal Regiment of Artillery.

GENTLEMEN,

HAVING been frequently requested by Officers ordered on detached duties from head-quarters, to give them some account of the Hospital œconomy at Woolwich ; as also, of the means of managing soldiers under some peculiar circumstances in regard to the preservation of their health, I conceived it would prove of more general use to compose a short account, and direct it

B

to

to be printed. Another inducement arose from the testimonies of the first military and naval characters, and some of the first medical talents in the country, which enable me to recommend the adoption of our regulations, in every situation to which they will occasionally appear to you in the performance of your duty applicable.

In the beginning of 1794, when I succeeded to the appointment of Surgeon General, the necessity of a connecting system to operate on the whole medical department of the ordnance at home and abroad soon appeared to me absolutely indispensable. At the same time, difficulties were not wanting to the formation of one. It was however attempted on the idea that even a defective system was better than none, as by time and attention, it would probably correct and improve itself. The immediate compliance of the Master General and the Board of Ordnance, with their liberal grants to aid and forward the completion

tion of the system, have facilitated the progress to its present improved state.

The practice of medicine in the regiment of Artillery is to the Surgeon a pleasant task, as his visits and duties, are not only under the influence of a well-formed and liberal arrangement; but also under the immediate influence of benevolence. The regiment, though consisting of upwards of 7000 persons, has the conduct of one family, a domestic union being cemented by the establishment of several societies whose objects are mutual alleviation and support.

A society has been long instituted for the benefit of the widows of the Officers of the regiment.

A society has been more lately instituted for the relief of the widows and orphans of the soldiers of the regiment, maintained by monthly stoppages; which originally was ge-

nerously supported by Marquis Cornwallis, the Board of Ordnance, and the Officers of the regiment.

An agreement has been entered into by the non-commissioned officers to create a fund for the purpose of granting an additional daily allowance to those of their number who may be pensioned. This was also sanctioned like the other.

Representations having been made of the extreme misery experienced by the wives of the private soldiers of the regiment at Woolwich during their lying-in, from the want of clothing for themselves and infants, necessary nourishment, and even the aid of the midwife, Lady Emily Macleod, with her usual promptitude to alleviate distress, proposed to the ladies of the regiment to form a plan for their relief, which was soon put in execution, and has been continued under her patronage with the most liberal exertions : it has proved
of

of the most extensive comfort and advantage to upwards of six hundred women and children.

Besides these institutions, the Officers have formed a fund for the relief of occasional distress, not comprehended under any of them, and which meets distress in almost every shape it can possibly appear.

There has been also, on account of the high price of provisions, a relief given to one hundred and thirty daily, of soup, boiled meat and potatoes, for which a small sum is paid; but which costs a great deal more—the surplus being defrayed by a subscription of the Officers, under the direction of the Commanding Officer.

On the whole it may be with truth alleged, that the regiment of Artillery furnishes a great example of disinterested benevolence, which, as a band of union, combines all in the firmest attachment.

Therefore the respective duties of the Officer and Surgeon cannot fail to be carried on with every prospect of benefit to the comfort and health of the men. But more depends on the Officer towards preserving the health of the men than on the Surgeon. The Surgeon's duty must be very limited in its operation, unless he be supported by the Officer. From co-operation every advantage may be expected which attention and our improved system can communicate.

These remarks, Gentlemen, may appear trite, they are so ; but they are of the first importance, and it is my duty to represent them. Whatever relates to the accommodation of sick, and to the preservation of health, can only be complete and successful under the watchful eye of the Officer. Though much depends on the Surgeon, yet much is referable to the Officer. The Officer however, should only make the Surgeon responsible, and support him in the execution of his
duty ;

duty ; but he ought not to interfere in its detail, otherwife confidence is endangered, and without confidence nothing can go on right. The mutual duties of each will occasionally appear in the course of the description of the Hospital at Woolwich and of the management of foldiers under some of the most remarkable causes of disease to which they are liable to be exposed.

The Officer of Artillery is peculiarly educated, and very favourably for every object of health. He is instructed in chemistry, by one who is assiduous, and whose experiments cannot fail to make a durable impression. Surely therefore, no Officer in the King's service can be better disposed to co-operate, as many points which the Surgeon may suggest, must necessarily fall within his own knowledge.

With the greatest respect and esteem,
I am, Gentlemen,

Your obedient Servant,

*Woolwich, Royal Artillery Hospital,
January, 1801.*

JOHN ROLLO.

A
SHORT ACCOUNT
OF THE
ROYAL ARTILLERY HOSPITAL
AT WOOLWICH,

Comprehending its Situation, Structure,
Œconomical, and Medical Management,
so far as is necessary for the Information of
an Officer of the Regiment.

Of the Situation of the Hospital.

THE Royal Artillery Hospital stands on
the declivity of a rising ground above,
and to the left of the town of Woolwich, com-
manding a pleasant prospect. It is not in-
festèd with any unhealthy exhalation. The
height

height of its situation above the level of the river Thames at high water, is sixty feet. The ground belonging to it is of an irregular figure ; but it is commodious, airy, and healthful. An objection, nevertheless, may be urged against the situation, namely, a deficiency of water.

An airy, unconfined, and rather elevated though sheltered spot, at a distance from a town, having a command of water, and uninfluenced by marshes, constitute the character of a situation for hospitals in general. Should an agreeable prospect be afforded, the value of the situation would be increased, as nothing whatever tends to enliven the minds of recovering sick so much as gay and cheerful scenes, and of course such a situation is of importance in perfecting recovery, and in the re-establishment of health.

In selecting the situation most proper for an hospital, the health of the neighbourhood
will

will always furnish a sure criterion, especially when conjoined with the preceding observations. In the choice of temporary hospitals on service, this criterion ought never to be overlooked. When such a situation cannot be obtained on shore, transports should be converted into hospitals, and these should be placed in the most healthy parts of the shore, and at the greatest possible distance from those which appear otherwise, and these are marked by marshes, woods, and muddy slimy banks.

With respect to the situation of an hospital, especially on service, the commanding officer ought to consult the surgeon, and be guided by his opinion. This is inculcated, from having seen on various services, when no such consultation had happened, that a great deal of reflection had arisen detrimental to good opinion and confidence.

Of the Nature and Structure of the Royal Artillery Hospital at Woolwich, and Out-buildings, with its adjoining Ground.

MILITARY Hospitals consist of two kinds: permanent and temporary; and each of these are calculated for the accommodation of sick, and those on recovery. The Hospital at Woolwich is permanent, and it accommodates sick and convalescents, in buildings named Hospital and Convalescent Barrack. Such accommodation shall be first described, and afterwards an account given of temporary hospitals for accommodation on actual service, so far as structure is concerned.

*Of the Structure of the Hospital and Convalescent
Barrack.*

The Royal Artillery Hospital at Woolwich, consists of a central building, and two wings advanced about ten feet, and stands nearly east and west. The central building forms the Hospital, the south wing the Convalescent Barrack, and the north wing Surgeons quarters.

The Hospital consists of three floors, the basement, ground, and chamber stories, and at each end two attic rooms. It has one entrance opening into a hall or part of a gallery running from side to side, and intersected by another gallery running from end to end, both in the centre of the building, and communicating with a double row of wards. There are similar galleries on each floor, which are lighted, when necessary, by lamps properly

perly disposed. Opposite to the door of entrance on the west front, is a stair-case leading to the chamber and basement floors, and on the floor of the latter, in the centre, is a door leading out to the back ground and offices.

The north and south gallery windows are formed of two parts, the upper a fixed window, and the lower consisting of two folding doors, with moveable shutters at the bottom. Every window in the Hospital, in the galleries and wards, has a ventilating contrivance, similar to that in St. Thomas's Hospital, and said to be the invention of Mr. Whitehurst. About an inch and a half of each pane in the bottom of the upper sash is cut away. A frame of glass is set across the window, resting upon the top of the under sash, and fastened to it by hinges. The frame can be moved on the hinges, so as to make a greater or less angle with the window, and by that means admit more or less air rising towards
the

the ceiling of the room at pleasure. The door of every ward has also a ventilating contrivance at top and bottom. A semicircular window had been placed over each ward door, moveable by means of a line and pulley; but, from the improper conduct of the patients, being always out of repair, the window was fixed, and the centre pane of glass taken out. In the bottom of each door horizontal apertures were made, and on the inside a board flanting obliquely upwards was placed, diverting the air from a direct horizontal course. The door of the wards open into the gallery, which extends from end to end of the building.

In the kitchen on the basement floor, an invention of Mr. Moser's (of Frith-street; Soho), on the principle of Mr. Whitehurst, is adopted, for the purpose of throwing in warm atmospherical air. A large square opening, grated, is made in the wall next to the back ground externally on a level with the floor,
and

and which passes behind a fire-place and stove, having a sand-bath conveniently placed for any useful intention, this communicates with eathern tubes placed perpendicularly, and heated by the fire terminating in a large tube of the same nature, which opens into the gallery of the first floor near the stair-case. The operation of this construction may be constant, and the quantity of heated air admitted is very considerable; but we only use it during the night.

On each floor of the Hospital there are twelve rooms, eight of which are nearly of a size, and contain five or six patients each; the other rooms are smaller, and appropriated to other purposes than sick wards. The whole of the rooms in the Hospital are thus disposed of. In the basement floor are the kitchen, laundry, store rooms, stewards and nurses rooms, and wards for sick. In the ground floor are eight wards for sick, two closets and four rooms for dispensaries, Surgeon

geon General's office and electrical apparatus. In the chamber story are eight wards for sick, two closets, four rooms, and four garrets; the closets in this and the ground floor hold the patient's clothes; the rooms on this story are the matron's apartments, the library, and for the accommodation of the assistant surgeon on duty; the attics for hospital furniture, &c.

The wards in the Hospital are distinguished into those for sores, casualties, venereals, pectoral complaints, fevers, including infectious diseases, and miscellaneous diseases.

The south wing, or convalescent barrack, is constructed on the same model as the central building, or hospital just described. The galleries and wards are placed in the same manner, only the latter are somewhat larger, containing eight in place of six persons. The gallery windows are constructed in the same manner; the doors open into the galleries

C

and

and have apertures at the bottom, and circular holes at the top, in place of the window with the centre pane taken out; but there are no ventilators in the windows of the wards. The entrance of this building is not in the centre of the front, it being at the north end. The communication with the back ground is on the ground floor, in place of being on the basement story. There are eight wards on each floor of equal dimensions. The two rooms on the ground story at the entrance door, are occupied by the guard and steward, and two rooms in the basement floor are employed as store rooms for the barrack and hospital.

'The north wing is surgeons' quarters.

The central building and wings are connected by a wall forming part of a circle, and the whole are uniformly connected by an advanced iron railing, in the middle of which is a gateway. The space between the Hospi-
tal,

tal, wings, and railing, is regularly planted with rows of poplars, and variegated with green turf, and clumps of evergreen shrubs. To the entering sick, pleasing impressions are conveyed of the comfort they are to enjoy within.

Having thus described the general structure of the Hospital and Convalescent-barack, we shall proceed to an account of the offices, out buildings, and ground.

At the back of the Hospital, there is a paved walk, extending its length, and from the middle of it there are steps leading to the ground which is laid out with gravel walks and grass plots, for the amusement and convenience of the patients. In the centre of this ground two stands of a suitable construction are placed for airing the bedding of the Hospital, and posts are erected between them, on which are suspended a chair for swinging exercise. A hedge fence separates

C 2

a piece

a piece of ground where the linen, sheeting, and palliassé bedding of the Hospital are dried, and where the straw-house, sand-house, fumigating-house, dead and dissecting-houses, are erected, and a fire-place for the burning of straw, over which, there is likewise placed an oven for baking suspected linen and clothes. The fumigating-house consists of one room, secured against the admission of air; hooks are fixed on each side to tie cords for suspending the cloaths—the fumigating matter being introduced, and set on fire, the door is immediately shut, and not opened again for twelve hours. The dead-house contains shells for corpse, and has a door communicating with the dissecting-house, which consists of one room lighted from the roof and sides, has a dissecting table, closets, and fire place; and is found very convenient for the intended purpose.

Adjoining to these buildings, are the coal-yard, wash-house, dust-hole, private and public

lic necessaries, which are partly screened from view. In one corner of this ground, at the separating wall from the convalescent or south wing, there is a pipe conducting water, which contributes to the Hospital supply. In the lower part of the same wall, there is a communicating door from this ground to the ground of the convalescent wing, for the purpose of conveying coals and straw. The back ground of the convalescent wing, contains the cooking-house, wash-house, dust-hole, private and public necessaries. It does not admit of walking exercise as the other ground, the patients, or rather convalescents requiring less confined walks, consequently are allowed a freer range under regulated care to the fields.

The bath-house stands at the back of the north wing, and has a communication with the Hospital to the eastward. It contains two warm baths, a vapour bath, two shower baths, and a distilling apparatus.

Upon the whole, the structure of the Royal Artillery Hospital at Woolwich, furnishes every advantage that can be obtained for the accommodation and recovery of sick, and even for the improvement of medical science; of course, it exhibits, three leading points to be attended to in the construction of hospitals in general: such as,

1. A free ventilation with regulated temperature.

2. Affording means of cleanliness.

3. In the patient's amusement, by being airy, and deriving gay prospects, with pleasant outgrounds.

4. In allowing a ready separation of sick, and preventing the spreading or progress of infectious diseases.

5. In

5. In admitting a change of situation and employment in convalescent barrack, and adjacent fields : and,

6. In the close residence of the Surgeons, and the opportunities they have of improvement.

The accommodation of the sick and wounded, forms a very interesting part of military movement and operation. The want of proper accommodation, deranges and disgusts, as it produces very serious and extensive effects in the minds of soldiers, by damping the spirit of enterprize and exertion, and may have some share in inducing desertion. While on the contrary, comfortable lodgements for the sick and wounded, secures confidence, and animates to the field. Therefore even in this view, the proper accommodation of the sick, is of great importance. But there are higher views with regard to it, in the preservation of life, in

the maintenance of health, in facilitating recovery, and in the security of completing a plan of active operations. These however, relate to the general interests of a soldier, so far as his health is concerned, as well as to his accommodation when sick, and shall be pointed out more particularly afterwards.

We have described the structure of a permanent Military Hospital, and we have no hesitation in recommending it as a model. Its situation is eligible. Its ventilation is guarded and complete. Its temperature is somewhat regulated. Its arrangement of rooms is peculiarly favourable and convenient, especially for preventing the spreading of contagion. Its division into an hospital and convalescent barrack, is extremely favourable to the restoration of health, and to the prevention of relapses, by admitting of a gradual return to the active duties of a soldier. Its supply of water, however, is not so free as could be desired.

Of

Of the Nature and Structure of temporary Military Hospitals.

In the construction of these, the same objects must be regarded as in that of the permanent hospitals. The nature of temporary hospitals may be thus arranged.

1. Into buildings, met with in the motion or progress of an army, as churches, town-halls, charitable establishments, barns, stables, private buildings.

2. Into huts and tents.

3. Into moveable or portable wooden hospitals.

4. Into ships and vessels.

And besides which may be stated the hospital, and wounded waggons, for the occasional conveyance of sick and hurt. The
bier

bier and sedan chair may be also mentioned, with any other modes pursued in removing from the barracks or field to the hospital, whether permanent or temporary, as furnishing a degree of accommodation. When an army moves sick are to be transported. When an army is in action, wounded men are to be carried from the field. When sick are to be embarked and disembarked, proper modes are to be employed.

1. Of Buildings which may be constructed into temporary Hospitals, as met with in the progress of an Army.

Churches, town-halls, and charitable establishments are what generally present themselves, and the two former are very commonly selected, as probably occasioning the least inconvenience to the people. This is a consideration of importance; but it deserves attention only, while compatible with the undoubted

doubted welfare of an army, especially so far as the recovery of the health of its sick is involved. The preservation of the health of an army is another subject, and will be afterwards treated.

Churches and town-halls are in winter entirely objectionable for the accommodation of sick. Their temperature and ventilation cannot be safely and guardedly regulated. They do not admit of a proper separation and division of the sick. In summer under necessitous circumstances, they may be used with the least inconvenience or hazard.

Charitable establishments, as being subdivided into many apartments, admitting of the separation of sick, regulated ventilation and temperature, will always furnish proper accommodation for sick. These, however, can only be selected under circumstances favourable to the substitution of other places for the reception

reception of their inhabitants. Such places might be private houses.

Next to charitable establishments the largest private houses would furnish the best accommodation. Both would allow of a separation of sick, of a guarded ventilation, and a regulated temperature, steps essentially requisite to the recovery of sick, to obviate the progress of contagion, and with other means ultimately to destroy it.

Barns and stables may, by the assistance of the engineer, be easily altered so as to furnish preferable accommodation to either churches or town-halls. Before the wings were added to the Hospital at Woolwich, we were deficient in accommodation for sick expected from abroad, and I suggested the alteration of a stable in the immediate neighbourhood. The engineer examined it, and reported that it might be very readily and speedily fitted
up

up for the purpose. It was a long wooden framed building, divided into six apartments, each having a door, but no windows. These divisions were preserved; but the separating wooden frames were taken down, built with brick, having fire-places constructed in them. The wooden walls of the whole building were lined with brick. The pavement was removed, and flooring with wood substituted. The roof was ceiled. Two windows on the back and front of each apartment were constructed of a single frame, moveable inwards and outwards on a centre pin. On the upper part of each window frame one inch and a half was preserved open, with a board on the inside, projecting obliquely upwards, which prevented the air from rushing in horizontally. A porch was erected at each door with its entrance to the westward, and on the north east of it a small window to admit air, and at the same time to shelter the door of the ward, which had openings in the lower part of it as in the hospital,

pital, by which a free and guarded ventilation were secured. Cooking-house, necessary-house, steward's apartments, and guard-room, were separately erected. The whole of this was performed in a very short time. It answered the purpose completely. It now makes a good barrack.

The Commanding Officer of Artillery, as his number will always be comparatively small, ought always to select, when he has it in his power, private houses for the accommodation of his sick. When he has time he may then attend to the construction of an hospital.

2. Of Huts and Tents.

Either huts or tents may be deemed the most temporary of any kinds of sick accommodation, and should never be adopted, except in cases of absolute necessity.

A well-

A well-constructed hut, when there are materials and time for its erection, is preferable to a tent. In the construction of a hut, its situation and ventilation ought to be principally regarded. The surgeon ought always to be consulted here, and in all other circumstances relating to the accommodation of sick. He then feels himself responsible, and acts with cordiality.

The preference to the hut, however, cannot supersede the occasional use of the tent, as it is portable, and can be used in the shortest residences of a moving army. Those in use seem tolerably well adapted for the purpose. The driest situation ought to be chosen, and a deep ditch should encircle it. The black earth should, in all possible cases, be removed from the surface occupied by the tent, in sandy soils, and covered with straw—the straw should be frequently aired or changed.

3. *Of the portable Wooden Hospital.*

These are also temporary hospitals, and they are preferable to the hut and tent. They are, however, only suitable to expeditions of an insular nature, as they would require a land service, with such a proportion of waggons and horses, as might be deemed impracticable. Such an hospital was constructed for the West India service, and being approved of, several were made and sent out to the Islands. On trial they were found objectionable. The sun penetrated their sides and roof, especially the latter, which, being of copper, diffused an intense heat, indeed so intense that they became uninhabitable, until an additional roof of rafters, elevated above the other twelve inches, and covered with shingles, was erected. Notwithstanding these objections, which might be removed by attention to a re-construction, another one was built by Mr. Wyatt, under the inspection of myself and some officers, who had been in the West Indies, which has
proved

proved of great use, and was found to be suitable. It was surrounded by a gallery, and a wooden roof. It could be taken down and raised in a very short time. The difficulty of conveyance appeared the only objection.

4. *Of Hospital Ships.*

These in all cases, convenient by the proximity of the sea to the motions of an army, will be found indispensable. In the navy, old ships are fitted up for the purpose. In the army, transports are generally employed. It would be of great advantage to construct some of the transports for the accommodation of sick, and to employ them either way as occasion required. The ventilation, the temperature, and the manner in which the sick lay, are the principal points to be attended to in the construction of an hospital ship.

To ventilate transports, various ways are contrived, which are so well known that it would be superfluous to give a description of them. The manner and the machines are adapted and laid in previous to the embarkation of troops, and all the officer has to perform, is to see they are made use of. They consist generally of windfalls, a tin apparatus worked between decks, and openings in the sides, and decks, guarded by tin tubes. In warm climates these modes will be found sufficient. In cold ones, they are objectionable in being occasionally impracticable on account of temperature. Under such circumstances, the application of Mr. Moser's principle of throwing in heated atmospheric air might answer every purpose. Suppose an opening was made in the side of the ship, (or a port-hole might be used) to which was fitted a tin tube, and this conducted through the ordinary cooking stove, and to open immediately on the opposite side; a similar tube might run from the opposite side
of

of the ship through the stove also, and open on its other side. Hence two currents of heated air would be diffused, by which means warmth and ventilation would go on together. By lengthening the tubes, the heated fresh air might be carried to any part of the ship, and farther diffused. The whole would be accomplished at no expence except for the tubes, as the ordinary fire is supposed to serve. This mode of ventilation ought to be adopted in transports, when the weather does not permit of a free ventilation.

In transports men lay in hammocks, cradles, and platforms. When a ship is at anchor, in smooth water the cradle will be found the most convenient for sick. In other situations the platform stands the next in point of comfort. The platforms should however be so constructed and placed, as to admit of passages between them.

*Of Hospital and wounded Waggon, and other
Means for the occasional Conveyance of Sick.*

The necessity of waggons to accompany an army, or a detachment of soldiers, on actual service, so constructed as safely and comfortably convey sick or wounded to places where they can be properly accommodated is at once obvious. These waggons may occasionally be made use of for other purposes. When the Horse Artillery was formed, an hospital and wounded waggon was constructed for each troop, on principles equally commodious and safe. The chief advantage arose from the manner in which the springs were formed, as they admitted of the easiest motion, and guarded as much perhaps as is practicable against that jolting motion so often complained of in various carriages, and on unequal surfaces.

The sedan chair is useful to a permanent
hospital,

hospital, in bringing men from barracks or quarters. The bier is better adapted for general purposes. It is better than any mode in fractures, &c. Both, as well as the wag-gons, are useful in the embarkation and disembarkation of sick.

We have thus given a brief description of the structure and nature of hospital accommodation at Woolwich, and of mere temporary provisions for the residence of sick, which may be applied to the various circumstances of military service, whether on an extensive or limited scale. On account of the importance of the subject, we shall repeat and add: that in the general construction of hospitals of every denomination, three principal objects have been stated, situation, water, and ventilation; but there are three other points which ought to be held in view, the temperature of the air, the size of the wards, and distinct separation of them.

The temperature of the air in the wards of an Hospital is of material importance. In the summer of our climate, and in hot climates during the whole year, where fires are not required, the attention to temperature is not so necessary. The ventilation, as adopted in the Artillery Hospital at Woolwich, can under such circumstances be freely employed. But when the temperature of the external air ranges below 40 of Fahrenheit's thermometer, it becomes then absolutely necessary to attend to the temperature of the wards of an hospital. The temperature of a ward should never, if possible, be under 45, nor ought it to exceed 60. In an hospital containing patients with any description of diseases, and who are not in a state of advanced convalescence, except those in fever feel and complain of cold, when the temperature is any way between 45 and 40. Taking the range of diseases in a military hospital, there is none, except some cases and states of fever where a lower temperature than 45 would not be prejudicial, inconvenient,

inconvenient, and uncomfortable. Pectoral complaints and venereals, which in general form the greatest proportion of complaints, require a temperature rather above than below 50. The great object, therefore, appears to be, and it is an object of difficulty, to regulate the ventilation, so as that the temperature should not be diminished where the external air is below 40. In large wards containing 16 patients or more, such a degree of ventilation as would be required, without more than one fire, could not be pursued. In small wards, such as those of the Artillery Hospital, it can be obtained, with the adoption of Mr. Moser's plan of throwing in heated atmospheric air into the galleries. Besides this advantage of small wards, they admit, as has been already observed, of classing diseases, and separating them, which promotes the interests of the sick, the œconomy of the hospital, and the improvement of medical practice. Another benefit arising from small wards is, that, while they admit of free ventilation and

the production and preservation of a proper temperature, they also allow of those means which we know prevent, and even destroy contagion. Of this we have had proof, in three wards containing patients with ship fever, when the disease did not spread, nor did subsequent patients, having other diseases, admitted into these wards, take the disease; but the wards had been previously fumigated by the means we employ. This is not a single fact, as the same circumstance has occurred several times.

However, in the construction of large hospitals, the wards for infectious diseases, ought to be in separate and distinct buildings. The Royal Hospital at Plymouth furnishes a model of this kind.

Of the æconomical Management of the Royal Artillery Hospital at Woolwich.

IN 1794, the æconomical management appeared extremely defective. The arrangement of the Hospital itself was then unfavourable; the gallery running from end to end being interrupted by Surgeons' quarters, which have been since removed. At that time the Hospital was large enough for the establishment. As it was, the wards had not a regulated ventilation. The bedsteads were posted, the beds were flock mattresses. The patients retained the same cloathing in which they were admitted. In short there was an entire want of system. No principles had been laid down; all was accidental. The necessity of a plan, comprehending every point of hospital detail became at once obvious. It was immediately commenced, and was gradually corrected: in the progress of which

we

we have availed ourselves of every improvement which has been suggested on the subject; and the only merit we assume is in having made the application, and unremittingly maintaining it. What follows is its present state.

Of the Furniture of the Royal Artillery Hospital.

THE furniture is supplied by the Board of Ordnance, on the demand of the Surgeon General to the Barrack Master, who issues what is wanting, and takes back what becomes unserviceable. Coals, candles, oil for the gallery lamps, straw for the palliassé bedding, and sand for the floor and galleries, are supplied in the same manner. An inventory is annually taken by the Barrack Master, and transmitted to the Board.

The furniture of the Hospital may be arranged into that which appertains to the patient,

tient, to the ward, to the kitchen, including diet utensils, and to the Matron and Nurses. The furniture of the Convalescent Barrack, is divided into that which belongs to the ward, gallery, and kitchen only ; but we shall notice only those things which are peculiar to both.

Hospital.

What is peculiar here appertains to the patients and wards.

Patients.

They are provided with a hospital uniform or dress, consisting of a flannel gown, waistcoat with sleeves, and trowsers, a callico shirt, and night and day cap. Every part of this dress is washable, and it is changed at stated times.

times. The charges of washing are defrayed by the patients.

Ward.

The principal part of the furniture of which consists of the bedsteads, bedding, and a portable water-closet.

The bedstead is made of hammered iron, with a facking bottom, and folds up; it has a loose tester curtain fixed to the top of the room, and opens on all sides; but it is only used occasionally. The bed and bolster are palliasses filled with oat straw, which is changed, and the palliasses washed, and so is the facking of the bedstead, as often as appears necessary; but never allowed to remain in use unwashed longer than a month. By such construction every part of the bedstead and bedding can be very readily and effectually cleaned and washed. The charges for this washing are also defrayed by the patients.

Curtains

Curtains which may be in use are taken down and washed every year in May, when the fires are discontinued; at the same time the wards and passages of the whole hospital are whitewashed, and the windows cleaned. The curtains are again put up in October, when fires become necessary. Every month or six weeks during the whole year each ward of the Hospital undergoes a thorough cleaning, and when there has been an infectious disease fumigated, and remains empty with the windows open, from twenty-four to forty-eight hours, as we can spare time. Besides, when a patient dies, the ward generally undergoes such a thorough cleaning; and always in cases of infection.

At the head of each bedstead is placed a small closet, to receive in one part the chamber-pot and urinal; and in another, the patient's combs, razors, &c. and on the top of the whole, his drink and medicines. When the latter is left to his discretion, which is
never

never done in cases of importance, or when the medicines are active. This is a simple contrivance, and it is found extremely convenient.

The portable water-closet is the invention of Mr. Binns of Mary-le-bonne; it answers the purpose of its construction very completely, and where fixed water-closets cannot be erected, they become a most desirable substitute.

The bedding of the patients, or part of it, as circumstances permit, is aired every day in suitable weather, on the stands framed for the purpose, and which are fixed on the back ground of the Hospital. The straw of the palliasses is emptied, and burned in the place appropriated for it; the palliasses are then washed, and refitted with fresh straw in the Straw-house. The straw generally used and preferred is that of oats.

There

There is a sedan chair for the purpose of conveying sick ; there are also biers.

Of the Furniture of the Convalescent Barrack.

WHAT is peculiar here appertains to the ward only. The bedding is the same as in the hospital ; but the bedstead is different. It is of the Spanish platform construction, of wood painted, easily taken to pieces and cleaned. It is so extremely neat and cleanly, that it has been introduced into the common barracks. The construction of this we owe to Major Holloway of the Royal Engineers.

Thus the furniture of the Royal Artillery Hospital at Woolwich, is calculated for convenience and cleanliness, which with the advantages of its structure, checks contagion, and prevents its generation. The removal of diseases, and the promotion of recovery are also forwarded.

Of

Of the Management of the Patients in the Hospital.

AS the object of a Military Hospital is the accommodation of sick soldiers, and so as to employ with more certain success than in any other place the remedies calculated to remove their diseases, the manner in which the patients are received, and their common management while in it, become a subject of much consideration, in describing the œconomy of the Royal Artillery Hospital.

When a soldier is taken sick he is immediately reported to, and examined by a Surgeon, and if his complaint is likely to continue twenty-four hours, he is ordered into the hospital. On his admission, an inventory is taken of his cloaths by the orderly non-commissioned Officer who conducts him, and who delivers it, signed, to the Matron, and he takes a copy in exchange, signed by the
Matron,

Matron, and it is delivered by the Paymaster Sergeant of the Company to whom the man belongs. The patient's cloaths are taken from him and deposited in the store-room or closets. His face, hands and feet are then washed with warm water and soap; but in cases of infection he is washed entirely. After which he is either put to bed or dressed in the hospital uniform, and placed in the proper ward. The patient's shirt and night-cap are changed twice a week; and the gown, waistcoat and trowsers once a fortnight. These are the stated times of change in ordinary cases; but the linen and uniform are changed oftener in those cases which may require it. When a patient dies, his bedding is completely removed, to be washed or scoured.

In lousy patients, and in cases of apparent infection, the cloaths are put in the oven and baked; they are then taken out and suspended in the fumigating house, where they undergo fumigation; afterwards they are

E exposed

exposed to the air, and whatever parts of them can be washed are so.

Every deserter or person joining the regiment, from a prison or jail, is examined by a Surgeon before he is taken to the barracks, and if he has the least suspicious symptoms, or his cloaths are dirty, or give out that peculiar smell which contagion conveys, he is received into the hospital, and goes instantly through the operation of bodily cleansing, and his cloaths of washing, baking, and fumigating. He is placed in a separate ward.

Recruits are also immediately examined, and those who have the itch are detained in the hospital, and cured before they are allowed to go to the barracks.

A Barber attends Wednesdays and Saturdays, to shave the patients and cut their hair; the expence of which is paid out of the stoppages they incur in the hospital.

Orders

Orders for the behaviour of the patients in the Hospital, are printed and put up in each ward. These relate to duties they are to perform, and what they are forbidden. Of the former, combing the hair, washing their face and hands, airing their bedding, and assisting one another, comprehend the principal. Of the latter, they are not to gamble, chew or smoke tobacco, dirty any thing, break or injure any thing, go into a different ward, swear or use indecent language, disrespect the nurses, &c.

Such is the general management of the patients in the hospital, and it comprehends chiefly three points, cleanliness, decency, and regularity; these tend to security against contagion, to promote recovery, and to preserve the habits of submission to order, so absolutely necessary to the formation of the soldiers' character, the effect of long and persevering discipline; but which the indolence of disease and recovery shakes off,

unless prevented by the minutest regard to his conduct while in the hospital. Besides, cleanliness, decency and regularity, during sickness, have a favourable influence on the moral character.

Of the Patient's Diet in the Hospital.

DIET TABLE.

1st. Full Diet.

Tea, or water-gruel with salt, for breakfast; the same for supper. Meat 12 ounces, with potatoes or greens, and 1 pint of broth for dinner. Bread 14 ounces. Beer 2 pints (of beer at 18s. the 36 gallons) and if other drink is wanted, water, or toast and water.

2d. Reduced Diet.

Tea, or water-gruel with salt, for breakfast; the same for supper. 1 ounce sugar. Meat 8 ounces, with potatoes or greens, and
1 pint

1 pint of broth for dinner. The same quantity and quality of bread and beer as on full diet.

3d. Low Diet.

Water-gruel or tea for breakfast. Water-gruel or barley-water for dinner. The same, or rice-water for supper. Bread 7 ounces. Patients on low diet are supposed to require no stated meal, drinks being only allowable, or even desirable; a small quantity of beer may be given when anxiously wished for, and permitted by their Surgeon. The bread is supposed to be chiefly for toast and water, or, should a patient incline, a bit may be toasted without butter, with a little of his gruel or tea. 2 ounces sugar.

4th. Milk Diet,

Milk 1 pint for breakfast. Rice milk 1 pint and half (sweetened with sugar when desired) for dinner. Milk 1 pint for supper. Bread

E 3

14 ounces

14 ounces. Drink, water, barley-water, or rice-water. 1 ounce sugar.

5th. Mixed Diet.

Milk 1 pint for breakfast. Meat 8 ounces, with potatoes or greens, and 1 pint broth for dinner. Milk 1 pint for supper. Bread 14 ounces. Drink as on milk diet. 1 pint of beer.

NOTES.

THE Meat mentioned in the different diets to be beef and mutton alternately. Should any patient particularly require a mutton chop or beef steak, instead of either the beef or mutton boiled and made into broth, the Surgeon may direct it accordingly.

The Steward is allowed to purchase ripe fruit, or any other article not comprehended in the several diets, by the permission and direction of the Surgeons.

Sago,

Sago, when particularly ordered by the Surgeons, will be furnished in the quantity equal to the value of one day's ordinary diet; but then for that day the Steward is to supply nothing else save toast and water, water-gruel, or barley-water, and any bread the patient may be directed. No beer is to be issued to any patient in the hospital, until after dinner, unless particularly ordered by his Surgeon; and no Patient is permitted to give his allowance of beer to another; for when he does not chuse the whole, or any part of it, it is to remain with the Steward.

This diet table was formed on two grounds, the one from being limited to a certain sum, the other from forming a suitable diet for every description of sick. It has been seen that the patient pays for his washing, and we now state his diet, of course the charges are made as moderate as possible, and are managed with

every œconomical care. Notwithstanding these charges, the patient saves considerably in the Hospital. This may be objectionable, as it holds up an inducement to deception; it does so: but on the other hand, many have families, and unless there was a saving, we could never take in a married man. Indeed this is never done except in cases of indispensable necessity. The Surgeon cheerfully attends him in his quarters; and the Commanding Officer always consents, when he is sensible the indulgence is not abused.

The diseases admitted into the Royal Artillery Hospital in general require a gradation of diet from one exceedingly abstemious to one affording proper nourishment. Besides such a gradation, a variety of diet is also required. The low diet is the abstemious point, the transition from which is the milk when it does not disagree, then the mixed, the reduced, and the full diet: when the milk disagrees, the reduced diet may be substituted

stituted without the meat. Every kind of fore, venereal, and pectoral complaints, which constitute the greatest proportion of our diseases, finds here its suitable diet.

The Steward receives the daily stoppages from the men by the Paymasters of Companies on account of their diet, as well as the other monies for washing; and they are regularly inserted in a book. In another book the disbursements are recorded, and every month they are examined and balanced by the Apothecary and Surgeon General. Any balance against the men is carried to the next month's account, and equalised by savings in the succeeding disbursement. When there is a balance in favour of the men, which is more generally the case, fish, poultry, fruit and additional porter are supplied to particular patients.

Of the Matron, Steward, Nurses, and other Servants of the Hospital.

THERE is a Matron, Steward, Nurses, with a Cook and Man-servant.

The Matron's duty is to take charge of the Hospital furniture, stores, and utensils of every kind, to superintend the Nurse's and Cook's duty, to inspect into the whole detail of the Hospital so far as relates to economical management, and she gives a daily report in writing on every point to the Surgeon General. Besides which, she directs the washing of linen, bedding and the uniform.

The Steward provides the diet.

There is a Nurse to every three wards, being a charge of fifteen or sixteen patients, whose duty it is to attend upon the men, supply them with drinks, keep them clean,
make

make their beds, and has the charge of preserving the furniture and utensils, and of washing and sweeping the rooms. The duty of washing and sweeping the galleries and passages is done by the Nurses alternately in the period of a week at a time. The Nurses also take in rotation the duties of Night Nurses, when there are patients requiring such attendance.

The Cook prepares the victuals and drink requisite for the sick, and she cleans the cooking furniture and the plates and dishes in which the provisions are served.

The Man-servant attends upon the Matron, lights the lamps, and does any other required duty.

The duties of each are particularly detailed in orders, with a copy of which each is provided; but as they comprehend only in detail the general circumstances mentioned, a more
minute

minute account is supposed to be unnecessary.

Of the Hospital Guard.

MILITARY and other Hospitals require in some respects a different œconomy. In public or private hospitals founded on charity, and for charitable purposes of a civil nature, who receive patients that have solicited their admission, and who are sensible the least breach of any of its regulations would be followed by dismissal, their conduct must be so uniformly proper, that it requires no particular restraint or controul. Such however is not the case in Military Hospitals, as the Soldier is necessarily admitted into them, and often compulsorily so, and must be continued until his disease is removed, or he becomes fit for duty. Besides, in Military Hospitals, patients are admitted with every complaint however trivial, but which
may

may render them incapable of duty, hence they are more inclined to feel impatient under restraint. From these circumstances a Military Hospital guard becomes indispensable. The Artillery Hospital has therefore a guard, which consists of a Sergeant and Privates. The Sergeant has orders in detail. These comprehend, the posting of his centinels, to prevent the entrance of improper persons, and visits, and to prevent noise, &c. ; the issuing of coals; the proper behaviour of the patients in their general conduct, and the observance of their orders; the ventilation of the galleries and wards; the extinction of fires and lights; the support of the Matron in the execution of her duty, &c.

The Sergeant gives a daily report to the Surgeon General, and the Field Officer on duty, of the observance or neglect of any order, and of any complaint. He also keeps a register of every patient in the Hospital, and the ward he is in, for the inspection of the
daily

daily Military Officers who visit the Hospital on duty.

Each Battalion of the Regiment has an Officer on duty, who visits the Hospital daily. In this visit he is accompanied by the Sergeant of the Guard, and thus seven different officers visit, and generally at different hours. The Field Officer, Captains, and Subalterns who have been visiting during the week, inspect the Hospital every Sunday, accompanied by the Surgeon on duty. Thus the good behaviour of the patient is maintained, and his interests are secured, while at the same time the Surgeon General's arrangement is supported.

Convalescent Barrack.

THE Hospital is solely intended for the reception and accommodation of men whose diseases require an unremitted medical attention,

tion, and all the comforts of good nursing. But when the state of convalescence arrives, a change of situation in manner and place is required, to forward the re-establishment of health. To obtain which it is neither always necessary or proper, to remove to a distance, which might be also generally inconvenient, and even impracticable. Therefore a removal to another house, where different manners are adopted, may afford a sufficient change for the promotion of recovery, and the accomplishment of health.

When the sick begin to feel the dawn of health, the mind becomes sensibly changed, and disgust arises to accustomed situations, manners and persons. Hence a disposition becomes formed inimical to recovery. When this period therefore arrives, the removal of the sick to another house, where they are to associate with different people, to engage in other manners, and to be sensible of a change of accommodation,

modation, the recovery advances rapidly and proves complete.

These observations apply to any description of sick; but more especially to the Soldier. In an hospital he is supposed to be comfortably warm, to do little for himself, from which he gradually forgets a barrack life, at least part of his habit to it. In an hospital he is under restraints, and should he be immediately dismissed from it to the common barrack, he would feel as a school-boy at his vacation, and enter on enjoyments however imprudent, without the least circumspection; hence a relapse, or an acquisition of a new disease. Besides which, from the great transition between the hospital and common barrack, and a too sudden return to duty, the same unfortunate effects might unavoidably happen. Indeed such really did occur, previous to the establishment of our Convalescent Barrack, and they were the reasons
which

which caused me to apply for its establishment.

Therefore the Convalescent Barrack is considered as a necessary and intermediate state between the hospital and barracks. The patients are transferred from the Hospital to the Convalescent Barrack, and there remain until they regain strength, become gradually accustomed again to barrack life, and are judged in proper health for the performance of duty. In this place then, the men are admitted as transfers from the hospital. They are allowed, when permitted by their Surgeons, to walk out twice a day when the weather permits, under the direction of one of the guard. They cook their own diet, are divided into messes; from which the cook is furnished in daily rotation. The cooks clean the dishes, wards and passages. They are not allowed to eat any of their diet in the wards, as they have separate places for the

F

purpose.

purpose. There are only two kinds of diet, which are as follow.

1st. Full Diet.

Water-gruel, and porridge for breakfast and supper. Broth with 12 ounces meat, greens and potatoes for dinner. Bread 14 ounces. Small beer 2 pints, or porter 1 pint.

2d. Mixed Diet.

Milk for breakfast and supper. Broth with 8 ounces of meat, greens or potatoes for dinner. Bread 14 ounces. Small beer one pint, or porter half a pint.

The meat alternately beef and mutton.

Convalescents, from pectoral complaints, the venereal disease, sore legs or the itch, are generally put on the mixed diet ; while every
other

other description of persons have the full diet. The men are classed in rooms, so as to suit the diet on which they are placed.

This Barrack has a Steward, Nurse and Guard.

The Steward acts here in a double capacity, as he supplies not only the diet, but takes care of the furniture, &c. The men in every room are responsible for its furniture. When a man is admitted he receives a list of what is assigned for his use, which he returns to the Steward on his dismissal, who previously examines.

The Nurse superintends the rooms, and conducts the washing of the bed-linen.

The duties of the Guard, are nearly similar to those of the Hospital. Reports are also made, as well as visits, in the same manner.

Of the Means employed in the Royal Artillery Hospital at Woolwich to destroy Contagion, and prevent its spreading ; and those injurious Circumstances unfavourable to Health, which have been attributable to Hospital Accommodation.

AN hospital may not only receive patients with infectious diseases, but it has been also found that a species of contagion may be formed. In an hospital infectious diseases which have been admitted, may be communicated to other patients, and to the attendants. If contagion is not formed in an hospital, something is very generally produced, which not only retards recovery, but endangers life. This is peculiarly shewn in cases of wounds, and compound fractures, which often prove fatal in large hospitals, whilst much worse cases recover in private houses.

Therefore there are three objects which demand consideration.

1. The

1. The management of patients with infectious diseases on their admission into an hospital.

2. The manner of obviating the generation of contagion in an hospital.

3. The prevention of the occurrence of any circumstance in an hospital inimical to recovery.

These, with the means of assisting recovery by a succession of fresh portions of atmospheric air, and cleanliness, comprehend the principal points to be regarded in the structure and management of all hospitals. They were the principles adopted, and uniformly held in view, in the arrangement of the Royal Artillery Hospital at Woolwich, and they continue to be unremittingly pursued. We shall state and concisely explain them.

1. Of the introduction and circulation of air, or ventilation.

2. Of cleanliness.

3. Of the admission of patients with infectious diseases, and of the means employed to prevent them from spreading.

4. Of the manner of destroying contagion and preventing its formation, or the formation of any other circumstance inimical to health.

Of Ventilation.

The necessity of a succession of fresh air in the apartments of sick is universally admitted; but caution has been insisted on in the performance of it, on account of the injury which might be sustained by a current of air to the patient, and which would be increased
by

by its being cold air, that is, colder than the temperature of the room. Therefore the principle of a proper ventilation, consists in its being free and complete, while so guarded as not to affect the patient by its current or coldness. This principle has been adopted in the Royal Artillery Hospital, by which atmospheric air is thrown in constantly and with safety summer and winter, contributing essentially to the removal of disease, and the prevention of any injurious formation. We refer to what has been already said on this subject in the remarks on the structure and nature of hospital accommodation, where the manner and application of this ventilation has been described.

Of Cleanliness.

Cleanliness of the patient and of every thing about him is indispensable. This and ventilation are the two first and most essential

objects in hospital management. The steps of cleanliness, and the modes towards securing it in the Royal Artillery Hospital, have been already detailed, in our account of the treatment of the Patients, and the Wards.

Of the Admission of Patients with infectious Diseases, and of the Means employed to prevent the Diseases from spreading.

THE particular treatment of such patients on their admission has been described already, under the head, Of the Management of the Patients in the Hospital. It is therefore sufficient to request a reference; and to relate those steps only which are used as additional means of prevention. The separation of the sick, and the utility of small wards has in describing the Hospital structure been likewise mentioned. But it is requisite to state here, that a Patient with his cloaths, admitted with a disease of infection, having undergone
the

the washing and cleaning of his person, and the lodgment of the cloaths in the oven to be baked, then fumigated and scoured, is put into a separate ward, or into one with a patient having a similar disease. All intercourse is prevented, except what is indispensable, by a centinel placed on the outside of the door of the gallery. By these simple means invariably prosecuted, infection does not spread in this Hospital. However something may certainly be attributed to the means which follow:

Of the manner of destroying Contagion, and preventing its Formation; and the Formation of any other Circumstance inimical to Health, in the Hospital, and which may be applied to every Situation where there are a number of Persons together in Health or Disease.

THE essential points, absolutely requisite, and which have been and are universally admitted

mitted on this subject, have been already mentioned, namely, ventilation, cleanliness, and the management of sick with infectious diseases: therefore these were held indispensable. Perhaps they may be entirely sufficient. We should however be unjustifiable were we not to lay considerable importance on other means which have been found to destroy contagion; hence it may be inferred, they may also prevent its formation. It is not meant to enter into any discussion of the peculiar nature of contagions, or of the manner in which they are supposed to arise. This could answer no useful intention; we shall be satisfied with describing the easiest, safest, and most effectual method pursued in this hospital for the accomplishment of the purposes related. The compositions are made and applied under the direction of Mr. Cruickshanks, our chemist and apothecary.

Take of pulverized Manganese, two parts.

Common Salt, four parts.

Oil,

Oil, or acid of vitriol (sulphuric acid)
three parts.

Water, one part.

A suitable proportion of this mixture is put into an earthen vessel, and suffered to remain until no vapours arise from it, or its peculiar smell is not perceptible. When a patient is admitted with an infectious disease, or when there are patients with sores having offensive discharges, one or two gally pots is placed in the wards, with about three ounces of the manganese and salt, to which is added half an ounce of water, and then is gradually poured on the whole a part of the ounce of the oil of vitriol (sulphuric acid); the remainder occasionally. These quantities are according to the proportions previously stated, and they answer the consumption of a day. A pot or two is also placed on the outside of the doors of the same wards in the gallery. The vapour is diffused over the whole ward and penetrates every where, and destroys
every

every other smell than what itself conveys. This vapour has been found by experiment destructive of the contagion of small pox, of course, it is likely to prove destructive of other contagions. It can be used with effect, without prejudice to the sick, in the manner we have described, and it is so very frequently in this hospital. The application of it therefore, while it destroys contagion, may also prevent its formation, and should be employed in all cases similar to those we have pointed out. It may prove useful, and we recommend its use in all situations, where a number of persons in health are confined together, as on board of transports, especially in bad weather. Two or three gally pots, with the quantities used in the hospital, would be found sufficient, and it would not be necessary to use them oftener than twice or thrice a week. It merits a trial in marshy places, where there may be an unavoidable exposure; in these cases the gally pots with the materials should be placed in the inside of
the

the windows and doors of the habitations next to the marshes.

The fumigation of the cloaths of infected and fufpicious perfons, of the wards in which patients have died with contagious difeafes, and of transports, have been mentioned as a neceffary precaution ; the manner of which is as follows :

Pulverifed Nitre 16 pounds.

Pulverifed Brimftone (fulphur) 32 pounds
mixed intimately together.

A proportion of this according to the intention and fize of the apartment or fhip, is introduced into an iron pot, at leaft three times the fize of the dimensions of the materials to be employed. Or it may be neceffary to have feveral pots, but ftill thefe muft be of the fize, having the relative proportion to the materials as juft defcribed. The pots are placed at proper diftances, taking
care

care to keep them more in the centre than toward the sides of the apartment or ship. Previous to the introduction of the pots, the apartment or ship must be closely shut up, so as no vapour can escape, then a small piece of red hot coal, wood, or charcoal, should be thrown into each pot, immediately after which the person must retire and secure the door or place by which he entered. Things should remain in this state at least 24 hours, when the pots may be taken away, and the apartment or ship cleaned, should it be required. Our fumigating room which is small is allowed about 6 pounds of the materials; each ward about 4 pounds; a transport of 3 or 400 tons would require six pots, each containing about eight pounds.

The means thus concisely described will be found adequate to the purposes for which they have been recommended. The Officer will perceive the very great importance of attending to them. He will see, they fall
much

much within his own sphere of duty as well as of the Surgeon; he will also discern when he can enforce or support the attention of the latter. One simple criterion deserves never to be forgotten, as it will uniformly point out when all is proper, or when all is wrong. When he visits the hospital, barracks, or transports, if he becomes sensible of a peculiar, uncommon, or unpleasant smell, continuing, and affecting him with a degree of sickness or aversion, he may be satisfied, cleanliness, ventilation, and fumigation are required. It is then his immediate duty to inquire into circumstances, direct the Surgeon to assist him, and as soon as possible remedy the evil, by the adoption of the means we have recommended.

Of the Medical Management of the Royal Artillery Hospital at Woolwich.

The principles on which this management have been conducted relate to the benefit of the patient, and the improvement of the Surgeon. Objects invariably in view. They are reciprocal. Unless the Surgeon improves, the patient cannot obtain all the advantages he otherwise would derive. We know, and we sensibly feel, that human life is too short, to acquire, even with the most suitable education, unremitting observation, accurate investigation, and unwearyed reading, the information which will give the conscious mind satisfactory confidence in the unreserved treatment of the sick committed to his charge. Such is the truth.

Therefore, in all establishments the improvement of the Profession should be held systematically in view. In the medical department
of

of the Ordnance it is so, a general outline of which shall be given, previous to the particular business of this Hospital. There is a Surgeon General, Surgeons, a Chemist and Apothecary, and Assistant Surgeons. The Surgeons and Assistant Surgeons are military and civil. The former are on the establishment of the Regiment, the others, are resident in situations where there are civil establishments of the Ordnance, and they form a part of them. The duty of the one is confined to Woolwich, to expedition and detached services, having under their charge the artillery men, and all others belonging to the ordnance. The duty of the other is entirely limited to the station; but comprehends as the other, artillery men and the civil branch. The Military Surgeons detached from Woolwich have Instructions, a copy of which (A) is subjoined. The civil Surgeons have also similar Instructions; but those in the West India Islands have an additional set, a copy of which (B) is likewise annexed. These Instructions form a systematic

tical arrangement of procedure ; and they secure equally attention and improvement.

Medicines are supplied by a druggist, under the regulation, that each supply before it is disposed of must be examined by the Board's Chemist and Apothecary, who is resident at Woolwich.

There are small detachments of Artillery occasionally in various situations without a Surgeon, the Commanding Officer of whom may make an agreement with a Surgeon to take care of his men, as reasonably as possible ; but he must make out his account in a particular form, as specified, (C).

The Military Surgeons who are not on detached service do duty at Woolwich, and this brings us to the Medical management of the Hospital. Previous to the detail of which, it may be proper to mention generally the progress of promotion. There are supernumerary

merary and established Assistant Surgeons; the former undergo an examination at the College of Surgeons, and must obtain testimonials of a medical character from those with whom they have studied, before they can be recommended and admitted; the latter are selected from them according to merit and seniority. The Surgeons are chosen in the same manner, from the class of the established assistant Surgeons. By this progress, suitable qualifications are, as well as it is practicable, secured and obtained.

Though the Surgeons and Assistant Surgeons are attached to Battalions, yet in the performance of duty they are regimental, as the Battalions especially at Head Quarters have not always their own Surgeon present. Therefore, the Surgeons at Woolwich have the duty equalized, according to their numbers, without regarding particular Battalions, except, that the Surgeon present always retains his own Battalion. At Woolwich there is generally two, and often three Surgeons,

besides Assistant Surgeons. In the Hospital the range of patients is from 110 to 160, or upwards. Besides these, there are women and children in considerable numbers to be daily attended to.

Each Surgeon has his division of the Battalions, of course of the men in health, and takes his chance of the number of sick they may furnish. The sick are admitted into the Hospital, and arranged as nearly as possible into wards according to the nature of their diseases. By which, the Surgeons may have patients in all the wards of the Hospital. No inconvenience whatever arises from this, on the contrary it is attended with general advantages. All being open to general inspection with regard to Nurses' attention, cleanliness and qualities of diet, no sourings arise from any difference of influence or enquiry—all are alike. The Surgeons attend at appointed hours in the morning, and their Assistants in the evening. Each Surgeon has a Register Book and Journal; the former for
the

the daily insertion of the patients' names, diseases, period in the hospital, diet and medicines prescribed; the latter for a detailed account of any singular case of disease, specifying the daily progress with the manner of cure, the event or termination. Those books when filled up are deposited with the Surgeon General.

The Medicines are under the direction of the Chemist and Apothecary; and he daily superintends the Dispensaries. The Medicines of any power or efficacy are directly exhibited to the patients at stated times. In this way every confidence may be placed in the Medicine prescribed.

Besides the ordinary duties of the Surgeons and their assistants, there is one of each who takes a weekly duty, and who are constantly in the way in case of accidents. The assistant on this duty sleeps in the Hospital. The Surgeon on duty reports daily to the

Surgeon General, on the ventilation and cleanliness of the hospital, and the state of it altogether; and his assistant gives one, of the admissions of the day, marking the diseases, and the wards into which they may be placed. This assistant also superintends once a day, the electrical operations, and inserts the patients' names, with the effects of the electricity.

Each Surgeon delivers to the Surgeon General weekly a return of his sick, specifying the alterations since the last one; at the same time general consultations are held on particular cases, which may not have required them during the course of the week. In ordinary days, when any thing singular occurs, consultations take place in the morning.

The Surgeon General gives a weekly return to the Commanding Officer, in detail and in abstract, a copy of the latter is preserved, and from which a general abstract of the admissions, dismissals and deaths has been made
out

out for five years, commencing in Jan. 1796, and ending 31 Dec. 1800. This is subjoined, (see D) as it will prove a document of importance to the Officer, in furnishing remarks on some of the most prevalent diseases of Soldiers, and shew him how far he has it in his power in the execution of his duty to prevent or alleviate them.

The Surgeons examine recruits, and they are guided by the following Instruction to Army Surgeons, and which every recruiting party is also obliged to observe,

“ Surgeons are to be particularly attentive to the examination of recruits, when such are brought before them; not to suffer any man to pass, who has not at his examination been stripped of all his cloaths, to see that he has no rupture, to ascertain as far as possible that he has the perfect use of his eyes and ears, and the free motion of every joint and limb; that he has no tumours nor diseased

G 4

enlargement

enlargement of bones or joints ; no fore legs, nor marks of an old fore : that his appearance is healthy ; that he is neither consumptive nor subject to fits :—with any of these defects, the man is to be rejected as unfit for service.”

The Surgeons, with the Surgeon General, examine the men demed unfit for service, a return of whom is then prepared, and the men are afterwards inspected and disposed of by the Board of Ordnance.

Port wine is allowed to the sick by the Board ; but any other is positively prohibited. The use of it is confined to cases of necessity, and only given in such as a medicine. On recovery porter is ordered, which is furnished out of the savings in the Steward's account ; or otherwise by the patients. A return of the expenditure of the wine, specifying each man's name, with the disease and quantity, is
sent

sent every six months by the Surgeon General to the Board of Ordnance.

In the hospital a medical library has been established. It has been patronised by the Master General and Board. It is further supported by the annual contributions of the Surgeon General, Surgeons and Assistants of the Regiment. It already consists of at least 600 volumes. It is permanent and inalienable. Of course it is annually augmented. A copy of its regulations are annexed. (See E) Its utility is at once apparent and unquestionable. In this library, occasional meetings of the Surgeons are held, for medical conversation, and the consideration of cases occurring in the Hospital.

Besides the patronage of the Board to the Library, they have also granted some valuable anatomical preparations, to which are occasionally added, preparations of morbid appearances occurring in the hospital.

Extraor-

Extraordinary cases of fatal termination, are examined in the dissecting room, an account of the dissection is registered, and any singular derangement of structure is preserved.

From this brief account of the medical management of the Hospital, the Officer will observe that it forms a system, directed entirely to the benefit of the sick. For although the Surgeon's improvement is not neglected, yet as that must be directed to the sick, the whole turns out ultimately to their advantage. Officers commanding ought to give Surgeons their confidence, and attach all the responsibility to them for the management of their Hospitals: and surely they should never interfere with their detail. The nurses and servants ought to be entirely under the direction of the Surgeon, and to be answerable to him alone for their conduct, and for holding their appointments. While the Surgeon is responsible to the Commanding Officer, the latter has it always in his power to ascertain whether his
duty

duty is regularly and assiduously performed, Should the Surgeon's conduct not entitle him to confidence, it ought to be at once withdrawn. But should the Officer rather wish to interfere in the detail and management of the duty, with the view of correcting the Surgeon, nothing will go on right, and the sick will certainly suffer. There can be no medium between confidence and the want of it. The Surgeon must either have the entire management of his Hospital or not. If he does not deserve it, let him be removed. But whilst he does his duty, he ought to be allowed to perform it to the best of his judgment, and there is no doubt he would give satisfaction to his Commanding Officer and do justice to his patient. For a Surgeon whose mind is engrossed by his profession, can have no motives of conduct, but what will appear in kindness, and in unremitting attention to his sick. Such a one, will allow no pleasure, no society, to divert, interrupt, or delay any part of his duty. Should there
be

be however a Surgeon, who has no satisfaction in his duty, but gets through with it as a toil and a vexation, and who performs it as a subordinate pursuit, any hospital, or sick charge he might have, would be so conducted, as could neither secure benefit to the patient, or approbation from the Commanding Officer. These opposite characters are soon determined by their respective conducts, and they are drawn, merely to lead the Officers to judge of the value of those who may have the charge of their sick.

The regulations for improving the Regimental Hospitals of the Army, composed by the Medical Board, and enforced by the orders of His Royal Highness the Commander in Chief in 1799, being comprehended under the regulations of the Master General and Board of Ordnance, and strictly enjoined by them; extracts have been taken of those parts the most material for an Officer to know; and will serve as a concise recapitulation. See F.

OF THE
CADET HOSPITAL.

An hospital has been lately erected for the sick of the Company of gentlemen Cadets; the plan of which is well calculated for the purpose.

There are only two wards for the sick, the one is larger than the other. The least is for infectious diseases. These wards, though in the same building, are yet entirely distinct, the entrance to each being by separate doors and stair-cases. An example is therefore furnished of a judicious arrangement for Hospitals on the smallest scale.

As this Hospital is conducted on the principles of the one for the men of the regiment in every respect, no further description of it is required.

This building was planned by Colonel Twiss of the Royal Engineers.

(A)

INSTRUCTIONS

FOR

SURGEONS OF THE ARTILLERY AND
ORDNANCE,

WHICH HAVE BEEN APPROVED OF BY THE

MASTER GENERAL AND BOARD OF ORDNANCE.

THE Surgeons are to preserve an exact daily register of the Sick, according to the form A.

Instruction 2d.

The Surgeons are to preserve a journal of singular or dangerous cases of disease, according to the Form B.

Note.—Those registers and journals are to be transmitted to the Surgeon-General when the books are full.

Instruction 3d.

The Surgeons are to transmit to the Board, and a Duplicate to Mr. Cruickshank with their demands of Medicines (as per Instruction 4th), an abstract of the number of men in health, and of the sick, specifying the diseases, deaths,

deaths, and recoveries since the last abstract, according to the form C.

Note.—Also, when any men are sent home, or from any station to Woolwich, as incurable, or unfit for service, or merely as sick, the Surgeons will transmit with them a particular account of their case, comprehending every thing necessary for explanation, according to the form B.

Instruction 4th.

The Surgeons are to transmit to the Board, and a Duplicate to Mr. Cruickshank at Woolwich when necessary, a return of medicines, and an expenditure of wine, according to the forms D and E. Such medicines and wine to be furnished by the Board; but in case of any want, to be supplied, on a written application of the Commanding Officer, or head of the department, by the Storekeeper, stating at the same time the reasons urging the necessity of the supply.

With regard to the exhibition of wine the Instruction of the Army Regulations to be observed. (See additional set of Instructions for West Indies (B) 15.)

The Surgeons, it is understood, are not to purchase any article whatever.

Note—

Note—The least expensive conveyance of transmitting those returns to be adopted.

Instruction 5th.

With the approbation of their Commanding Officers, the Surgeons are to fix the diet of their patients as nearly as circumstances will permit, according to the diet List of the Hospital, and their patients are to observe the same conduct.

Instruction 6th.

The Surgeons are responsible for any instruments in, or may be, in their possession, furnished by the Board; and they will be charged with any deficiency at the price paid by the Board to their Cutler.

Instruction 7th.

The Surgeon General, at Woolwich, is directed by the Board to report on the exact compliance of the Surgeons with the preceding six Instructions; and the Surgeons are informed that any neglect or disobedience of them will meet with that degree of censure and penalty the nature of the case may appear to the Master General and Board to deserve.

A

WHICH IS TO BE DAILY FILLED UP.

Medicines Prescribed, &c.	Admitted.	Discharged.	Died.

B

FORM OF THE SICK JOURNAL.

IN detailing the singular or dangerous cases of disease, the following arrangement is to be observed :

1. The General Description.
2. The Daily Description.
3. The General Result.

1. *The General Description to comprehend,*

The Patient's name, age, occupation before enlisted, apparent constitution or temperament, colour of hair and eyes, complexion.

Present symptoms, with their former state and progress, so far as can be ascertained.

Name of the Disease.

Treatment to be pursued.

Diet.

2. *The*

2. *The Daily Description to comprehend,*

The effects of the remedies employed.

The changes in the medicines or diet.

3. *The General Result to comprehend,*

The recovery, or any other termination ; and whether the patient is likely to become fit for service.

The death, with a particular account of the morbid appearances on dissection, which is always to be performed when practicable, and if not, the reasons to be stated.

C

Abstract of the Men in Health at the _____, and of the
the _____

DISEASES.	Number which have been under cure.	Number discharged cured.
Fevers—Intermitting, Ship or Jail, Small-Pox, &c.		

C

Sick, Deaths, and Recoveries, from the to
inclusive.

Number discharged as incurable or unfit for service.	Number died.	Number remaining under Cure.	Number of Persons in Health.

D

Return of a Demand of Medicines,

Name of Medicines	Quantity of Medicines received according to last demand.		Quantity of Medicines expended since the last demand.	
	Pounds.	Ounces.	Pounds	Ounces
Acid Vitriol, &c.				

The Surgeon to accompany the Demand with an Abstract, as by Form C ; and to state particularly the Necessity of any extraordinary Consumption or Demand.

E

Return of Wine expended for the use of the Sick of the
nance, from the

Battalion, Corps, or Detachment.	Company.	Name.	Disease.

To be approved by the Commanding Officer, and certified by the Store-keeper and Surgeon ; and should any urgent necessity arise, to occasion the purchase of Wine, the prices must be annexed, and the reasons of the necessity stated.

(B)

RULES AND REGULATIONS

TO BE OBSERVED IN THE

ORDNANCE HOSPITALS,

IN THE DIFFERENT WEST INDIA ISLANDS,

*Which have been approved by the Master General and
Board of Ordnance.*

1st. THE Hospitals to be supplied with Palliaffe bedding, filled with plaintain leaves, to be changed as often as the Surgeon shall consider necessary.

2d. A steady Non-commissioned Officer, belonging either to the Artillery or the Corps of Artificers, to be selected and appointed with the approbation of the Commanding Officer of the Corps to which he is attached, as Steward of the Hospital; who is to furnish the diet, take charge of the furniture and bedding, for which duty he is to be paid one shilling and sixpence sterling per day.

3d. A Nurse to be provided for every twelve sick men: for which duty she is to be allowed one shilling sterling per day.

4th.

4th. When the number of sick men in an Hospital amounts to twenty-four, one Washerwoman is to be employed and paid at the rate of one shilling sterling per day but when the number of sick amounts only to twelve, the Washerwoman is to be paid sixpence sterling per day, and to furnish soap.

5th. The Steward of the Hospital is to draw from the Commissary of Provisions one shilling sterling per day exclusive of the bread, for each sick man's ration; and to receive from each sick man in hospital threepence halfpenny per day out of his Subsistence. Also from the Ordnance Storekeeper six pence sterling per day for each sick man in hospital; all which sums are to be applied to the purpose of purchasing every article of diet necessary, exclusive of wine.

6th. The Storekeeper of each Island to pay the sixpence sterling per day, upon receiving from the Commanding Officer either of the Artillery or the Corps of Artificers, a Certificate of the number of sick men in the hospital, and the amount of the payments is to be charged in the Storekeeper's accounts.

7th. The stoppage of threepence halfpenny per day from the subsistence of the sick men in the hospital, to be paid by the Paymasters of Companies.

8th.

8th. The Steward of the Hospital is to keep a book of receipts and disbursements; which book is to be examined every month by the Officer Commanding, the Storekeeper and Surgeon, who are to certify the same. A duplicate of each month's receipts and disbursements is to be lodged in the public office, as is also the Steward's book when filled.

9th. The wine returns and demands for Medicines to be transmitted to the Surgeon-General in England every six months, according to the forms established by the Board, together with an abstract of the number of sick, and the amount of the expences for the preceding six months, certified by the Officer Commanding and the Storekeeper.

10th. The Steward of the Hospital is to receive from the Barrack Master's department each man's allowance of fuel and candles, which, if insufficient, the necessary additional quantity is to be furnished, and charged to the Board in the same manner as the wine.

11th. The cooking, carriage of water, and all out-of-doors heavy work is to be performed by Negroes. One Negroe to be allowed for every twelve men in Hospital; which Negroe is to be hired at the cheapest rate, in case one of the Negroes attached to the Artillery cannot be spared for the duty.

12th.

12th. A monthly return from each Island is to be transmitted to the Commanding Officer of Artillery in the West Indies, of the number of sick in Hospital; which return is to be signed by the Surgeon, and certified by the Commanding Officer of Artillery upon the Island.

13th. The patients in the hospitals are to be kept upon particular diets, according as their Cases shall require; a detail of which is to be preserved for the information and guidance of the Surgeon, as well as the Steward of the Hospital.

14th. The Surgeons to observe strictly the instructions already sent to them from the Board.

15th. Port wine only to be allowed, the use of any other sort being positively prohibited by the Board: and in the exhibition of wine the following article from the army regulations, sanctioned by the King, is to be implicitly obeyed, viz.—“ When wine is indispensibly necessary, it is to be given as long as the case absolutely requires, but no longer; and it must be given by the Surgeon himself, unless previously mixed by him with medicine or food; and porter or good beer, whenever the case will admit of it, is to be given in lieu of wine.” Such porter or beer to be furnished by the sick, or out of the savings of the hospital stoppages, (as is done in Woolwich Hospital)

tal) unless the quantity should exceed what the patients are able to afford ; when, on a representation to, and order of the Commanding Officers of Artillery, or the Commanding Royal Engineer, as the case may happen, it will be purchased and admitted in the Storekeeper's charges to the Board.

16th. Wine is to be demanded from England every six months, according to the form already mentioned in the ninth article of these regulations ; and not to be purchased in the country, unless it should become absolutely necessary ; but even if any wine should be purchased, it is to consist of Port wine, and no other sort.

17th. Medicines are not to be purchased in the Country on any pretence whatever, except in case of absolute want ; and if such want of medicines or wine should arise from the Surgeon's neglect in not making his demand regularly, conformable to his instructions, he will become chargeable with any difference of expence that may be incurred,

By Order of the Board,
R. H. CREW, Secretary.

GENERAL

(C)

GENERAL ORDERS.

Office of Ordnance, 6th March, 1798.

WHEN an Officer is detached with a party where there is no artillery or ordnance Surgeon within reach, he is to employ such medical person as will pay proper attention to any of the detachment who may fall sick, while at the same time his charges are to be as reasonable as the custom of the place will admit ; each man's name is to be specified in the bill, his disease, the peculiar medicine and the price of the article ; and the bill is to be transmitted to the Board previous to payment.

(Signed)

R. H. CREW,
Secretary.

(D)

Abstract of Admissions, Discharges, and Deaths, in the Royal Artillery Hospital, from 1st January, 1796, to 31st December, 1800, being a period of five years.

Diseases.	Admitted.	Discharged.	Died.	Proportion of Deaths.
Fever, Low, &c.	381	337	17	1 in 20 nearly.
—— Intermittent,	134	146	0	
—— Scarlet,	13	12	3	1 in 4
Venereals, - - -	1197	1221	6	1 in 203 nearly.
Gonorrhœa - - -	278	297	0	
Sores - - -	1788	1771	2	1 in 885 nearly.
Pectoral Complaints - -	874	803	51	1 in 16 nearly.
Rheumatism - - -	212	223	0	
Diarrhœa - - -	106	93	8	1 in 12 nearly.
Sore Throat - - -	135	129	0	
Falling Sickness - - -	66	66	2	1 in 33.
Palsy - - -	10	11	0	
Dysentery - - -	15	7	4	1 in 2 nearly
Jaundice - - -	17	20	1	1 in 20.
Sore Eyes - - -	22	21	0	
Fractures, simple and compound	27	25	1	1 in 25.
Amputations - - -	22	22	2	1 in 11.
Measles - - -	41	39	2	1 in 19 nearly.
Small Pox { Natural	25	26	11	1 in 2 nearly.
{ Inoculation	40	41	0	
Abscess	49	45	3	1 in 15.
Piles and Fistula	15	17	1	1 in 17.
Dropfy	14	13	5	1 in 3 nearly.
Cholera,	26	21	0	
St. Anthony's Fire	3	3	0	
Infane	6	3	1	
Pleurisy	8	7	2	1 in 3 nearly.
Hepatitis	4	7	0	
Peripneumony	2	0	0	
Diabetes	1	0	0	
Spitting of blood	1	0	1	
Stone	0	0	1	
Wound by Cannon Shot	1	0	1	
Gangrene	0	0	2	
Effects of Arsenic	0	0	1	
Ruptured Spleen	1	0	1	
King's Evil, White Swelling, &c.	7	4	4	
Miscellaneous, as Itch, &c.	1985	2005	0	
Total	7526	7435	133	1 in 56 nearly.

REMARKS.

This abstract shews, the great number of patients admitted into this Hospital, with the nature of their diseases, and the proportions of deaths.

When it is considered that we have sick from every quarter where there are Artillery Soldiers, as well as from the Garrison at Woolwich; and that the former are men worn out by disease, or service, the proportion of our deaths has not been great. Especially when it is observed that the greatest mortality, to the amount of more than one third of the whole, falls under Pectoral complaints, which comprehends Consumption, one of the most fatal diseases when formed, which is known.

The most predominant, and fatal diseases among our Soldiers appear to be Fevers, Pectoral Complaints, and Small Pox. Others are prevalent, but not fatal, as Sores, Venereals.

Fevers are generally in this country of the contagious kind, and from their fatality, the prevention of them, and the checking of communication deserve every attention from the Officer.

Many of the Fevers specified here were from the Continent, as well as the Diarrhœas and Dysenteries, though some of the latter were from the West Indies, which accounts for the mortality, as the diseases had been of long continuance, and the constitution exhausted.

Pectoral complaints are extremely frequent, and when they terminate in Consumption may be said to be incurable. They are very insidious in their attack and progress. They often begin by a slight cold, then a little cough, with which they go on until a confirmed Lung disease is produced. Officers should therefore direct the Non-commissioned Officers to be on the watch, and whenever men are observed to have coughs, they ought to be reported to their Surgeon. Pectoral complaints are not unfrequently occasioned by a course of mercury. To this cause we have often traced Consumption. When the Venereal Disease has been treated by the new remedies no such effect has followed. The six men who died with the Venereal Disease, were men worn out by mercury, and some of them had come to this Hospital from a distance. The others, were destroyed by a species of Phagednic Ulcer, the effect of mercury, and the Venereal Disease, in probably a peculiar constitution.

The new remedies of themselves, or alternately exhibited with small doses of mercury, are better calculated for the safe and effectual removal of the Venereal affections

tions of Soldiers, than any other means of treatment hitherto adopted. They form no new disease, or morbid combination. The constitution is left unimpaired. While the disease is not so liable to re-appear in any of its secondary forms. Our practice in this disease has now been of three years duration, and we thus give the result.

Of 27 instances of simple and compound Fractures, with 22 cases of Amputation, one of whom was a man who had both legs shattered by the explosion of a gun, which were obliged to be immediately amputated (he recovered), only three died; a practice so successful, that no hospital can produce its equal except those under the same circumstances. We attribute it entirely to the cleanliness, ventilation, and smallness of the wards. In bad cases of this kind a patient has a separate ward. This success and the cause of it has been acknowledged by several Surgeons of the London Hospitals.

Nothing can point out more strongly the necessity of Inoculation than the fatality of the Small Pox. The Cow Pox is now introduced under the most favourable auspices, and is likely to supersede the other. We inoculate with it at Woolwich, and with every success hitherto.

(E)

LIBRARY.

THE amount of the Master General and Board's donation; the annual Subscriptions of Surgeon General, Surgeons, and Assistant Surgeons, and their respective present of books, with the resolutions securing the inalienability and permanency of the Library, having established a valuable and well-assorted collection, which cannot fail to prove of the greatest utility to the Medical Department of the Royal Artillery, it has been judged necessary to insure and extend its advantages by the adoption of the following Regulations.

1st. In order to purchase the periodical medical publications, and any other new work of merit which may hereafter be published, it is agreed, that the annual subscriptions should continue according to the subsequent rates, and which are never to be exceeded.

Surgeon General	-	-	-	£. 1	11	6
Surgeons (each)	-	-	-	1	1	0
Assistant Surgeons (each)		-		0	10	6

2d. As some of the subscriptions remain unpaid, it is resolved, that the Surgeons and Assistant Surgeons shall pay up their annual subscriptions since the establishment of the Library in 1794, and those who have joined since, or may hereafter join the regiment, shall pay from the time of their appointment, otherwise they will not be considered

considered as members of the Library, and will of course be deprived of its benefits.

3d. The periodical publications agreed to be taken in are, Duncan's Medical Annals, Simmon's Facts, Nicholson's Journal, and the Medical Review.—Any other books to be selected, and approved of by a meeting of the members—such meetings to be considered as part of the medical meeting, held once a fortnight; but an extraordinary one may be called at any time by the Treasurer and Librarian.

4th. The Apothecary for the time, when a member, to be Librarian and Treasurer.

5th. On the 1st of January every year, the Commanding Officer at Woolwich, the Adjutant General, and Surgeon General, to examine the Library, and send a report of its condition to the Board of Ordnance.

6th. No book to be taken from the Library without its being entered in a book (kept for the purpose) by the person who takes it, and to which he must add his name, otherwise he will forfeit the value of the book, besides the restoration of it.

7th. The periodical publications not to be taken from the Library earlier than one month from the time of their

having been received, and the same rule to extend to all new publications.

8th. When a member takes a book down, for perusal in the Library, he is to put it back in its place on the shelf.

9th. The forfeits of the 6th Resolution to be added to the annual subscriptions for the benefit of the Library.

10th. A copy of these resolutions to be transmitted to the Surgeons and Assistant Surgeons of the regiment detached from Woolwich, with a statement of their Library account.

At a meeting held the 7th day of April, for the purpose of considering the above resolutions (consisting of the gentlemen whose names are hereunto subscribed) they were unanimously agreed to, especially as they comprehended the conditions on which the Board's grant of 100*l.* was obtained.

J. ROLLO, *Surgeon General.*

G. IRWIN, *Surgeon.*

W. CRUICKSHANK, *Surgeon.*

W. WITTMAN, *Surgeon.*

N. HORNSBY, *Assistant Surgeon.*

R. ROBERTS, *Assistant Surgeon.*

Mr.

Mr. CRUICKSHANK, as Librarian and Treasurer, is requested to order some copies of the preceding resolutions to be printed, and to transmit one to each of the Surgeons and Assistant Surgeons at present detached from Woolwich.

ABSTRACT of the State of the Library, April, 1798.

	£.	s.	d.
Books granted by the Board of Ordnance	-	100	0 0
Ditto purchased by the annual Subscriptions of the Members	-	45	18 3
Ditto presented by Dr. Rollo	-	40	13 0
Ditto ditto by Dr. Irwin	-	3	5 0
Ditto ditto by Dr. Smyth	-	3	9 6
Ditto ditto by Dr. Jameson	-	1	13 6
Ditto ditto by Mr. Cruickshank	-	7	5 0
Ditto ditto by Dr. Campbell	-	0	15 0
Ditto ditto by Dr. Wittman	-	4	13 0
Ditto ditto by Dr. Macculloch	-	0	14 0
Ditto ditto by Mr. Hornsby	-	1	15 0
Ditto ditto by Mr. Roberts	-	0	8 0
Ditto ditto Publications of Dr. Chisholm and Mr. Kite, and Colm	-	0	18 0
<hr/>			
Additions from 1798 to 1801, by annual Subscriptions of Surgeons	-	211	7 3
	-	35	0 0
<hr/>			
Present Value of the Library	£.	246	7 8

The Library increases annually in Numbers, and in Value to about £.12

Extracts

(F)

Extracts from the Regulations to Regimental Surgeons for the better Management of the Sick in Regimental Hospitals by the Medical Board of the Army.

Horse Guards, Sept. 1799.

HIS Majesty having been pleased to approve the following Regulations for the use of Regimental Hospitals, His Royal Highness the Commander in Chief hereby enjoins Commanding Officers of Regiments, of every description, and all Regimental and Assistant Surgeons, to govern themselves, in their respective duties, touching the care of the sick Soldiers, and management of Regimental Hospitals, in strict conformity thereto.

By Order of his Royal Highness the Commander
in Chief

HARRY CALVERT,
Adjutant General.

The reports of the visiting Officer, and of the Surgeon, will afford such information to the Commanding Officer, as will satisfy him, with the help of his own occasional visits,

visits, that the sick are diligently attended, and humanely treated. The journals to be kept by the Surgeon, will be undeniable proofs of his diligence, and the best evidence of his professional abilities.

All regimental hospitals are under the immediate direction of their respective Surgeons, subject nevertheless to the general directions and superintendence of the Inspector of Regimental Hospitals, or of any other Officers of the Medical Staff, who may be ordered by his Royal Highness the Commander in Chief to inspect them from time to time, to see that every part of the Hospital Regulations has been observed; to ascertain the wants, and attend to the just complaints of the men; to assist with their advice, the attending Surgeons; and to propose to the different Officers commanding brigades or regiments, such further regulations, as they think may conduce to the benefit of the sick.

Every Regimental Surgeon, or in his absence the Assistant Surgeon, is to provide an airy, roomy, and healthily situated Regimental Hospital, where good water may be easily procured, unless the regiment is in barracks, where a part of the barracks, or other convenient place, is to be allotted by the Barrack Master General for the reception of the sick.

During incampment an Hospital Tent is allowed in aid of an hospital; but, except in cases of absolute necessity,

city, it is not to be the sole hospital; and great attention should be paid to the choice of the ground, where the Hospital Tent is to be pitched, which, if possible, should be on a dry piece of ground, near the Regimental Hospital.

A trench is to be dug round it for carrying off the water, and for the inside, straw worked up in thick mats should be laid upon dry sand or gravel, under the palliasses. Where mats cannot be made, some fresh straw should be placed under each palliass, confined by boards or wicker-work, twelve or fourteen inches high, placed round the sides of the bed; the straw to be changed once a fortnight at furthest.

The windows of the hospital to be opened, and the walls of the tent to be lowered every day, to admit fresh air, and during the interval, the beds of the convalescents and others who can sit up, to be made, and no man who is able to sit up, to be allowed to sit, or lie upon his bed during the day. Occasionally in fine weather, the rugs, blankets, &c. to be hung out on bushes or laid upon the ground, and often turned, and the bedsteads and canvas scoured with soap and water.

All men with infectious diseases, putrid fevers, fluxes, small pox, or measles, to be removed immediately from camp or barracks to a separate house, or in certain cases
of

of exigency, to an hospital Tent.—In all cases of this sort, and particularly after the removal of a corpse, the ward is to be fumigated.

No packs, &c. to be permitted to hang up, or lie in the wards : the non-commissioned Officer attending the hospital, is, on the admission of the patients, to take charge of their necessaries, &c. and to be responsible for them.

Every patient to be provided with a clean shirt, and a clean pair of stockings, if he can sit up, twice a week, or oftener if necessary, and with clean palliassé cases, and clean sheets once a fortnight, or as often as there is occasion ; the patients heads should be combed, and their faces and hands washed every morning, and their feet once a week in warm water. They should be shaved twice or three times a week.

Men who become convalescent ought not to be reported too soon for duty.

Whenever the itch prevails in a regiment, there is to be a weekly inspection of all the men, by the Surgeon, or Assistant Surgeon.

All men with the venereal disease are to be confined to the hospital.

The

The Commanding Officer should be applied to for a guard, in order to furnish one or more centries to the Regimental Hospital, and the same to the Hospital Tent, which centries are to be directed to permit no person to enter but those concerned in the Hospital, the Staff, and Officers of the Regiment. They are to be particularly careful in preventing liquor or any thing improper from being carried into the hospital, nor are they to permit any patient to go out (to the necessary excepted) without a ticket of leave from the attending Surgeon.

The Regimental Surgeon or the Assistant Surgeon should regularly visit the Hospital, at least twice every day, and keep a book of the admission, discharge, and the cases of patients, in which the name, age, disease, diet, and treatment are to be fully inserted.

In cantonments and barracks, the quarters of one of the Surgeons are to be very near the hospital; when encamped, one of them is to sleep in camp, and the other near the Regimental Hospital.

When wine is indispensibly necessary, it should be given as long as the case absolutely requires it, but no longer; and it must be given by the Surgeon or Assistant Surgeon himself, unless previously mixed by them with medicines or food, &c. Porter, or good beer, should, whenever the case will admit of it, be given in the lieu of wine.

The

The Regimental Surgeon is to pay particular attention to the examination of recruits, when such are brought before him; not to certify for any man's fitness to serve, into whose state of health he has not regularly enquired, and who has not, at his examination, been stripped of all his cloaths, to ascertain that he has no rupture, that he has the perfect use of his eyes and ears, and the free motion of every joint and limb; that he has no tumors, nor diseased enlargement of bones and joints; no sore leg, nor mark of an old sore; that his appearance is healthy, that he is neither consumptive nor subject to fits; with any of these defects, the man is to be reported as unfit for service.

Every Regimental Surgeon, and Assistant Surgeon, on receiving the Commanding Officer's authority for so doing, are expected to take care of the sick of any other Regiment, Detachment, or Recruiting Party, men on furlough, &c. whose Regiments are at a distance, provided there is no General Hospital in the neighbourhood.

Every Regimental Hospital should be provided with a sober, steady Sergeant, who understands accounts, to be approved of by the Surgeon of the Regiment, and to act under his immediate directions. The Sergeant is to have the discharge of the sick, under the direction of the Surgeon, and to see his orders punctually obeyed by every other person in the Hospital; and as the duty intrusted to his charge is of the utmost importance to the sick, and
without

without his diligence and attention to the Surgeon's orders, the best medical efforts may prove abortive, it is expected that the Surgeon of the Regiment will be extremely cautious how he approves of a person recommended to this duty, and that he will previously enquire into his character, and strictly examine his abilities for this undertaking. This Non-commissioned Officer should be exempted from all other duties, and entirely attached to the Hospital.

In every Regimental Hospital, a room should be appropriated to the accommodation of such convalescents, whose state of health will admit of their being placed on full diet. This Hospital to be regularly visited by the Surgeon once, twice, or oftener in the day, as circumstances may require.

It is particularly ordered, that none of the Hospital Tables and Orders, which are to be hung up in a conspicuous place in every Regimental Hospital, shall be defaced by any person whatever, nor taken down, but by the Surgeon, or Sergeant, the latter of whom will explain the allowance ordered for those patients who are not themselves in a situation to read the table for the distribution of diet.



SOME OBSERVATIONS

ON THE MANAGEMENT

OF

ARTILLERY SOLDIERS,

Under the most remarkable Causes of the Diseases, to which they are liable to be exposed.

THE removal of the diseases of soldiers, is the peculiar business of the Surgeon, the prevention of it, that of the Officer. However, co-operation is necessary. The Surgeon, sensible of the difficulty of restoring health, becomes anxious to preserve it. He may and ought to represent, but the Officer must execute. A soldier is a careless character, so far as respects his health. He must not therefore be left to himself, his Surgeon and Officer must act for him, and it is their duty to do so.

In these observations, some arrangement shall be observed: we shall consider

1. The most general causes of the diseases of Soldiers.
2. The most obvious means of preventing them.

Of the most general Causes of the Diseases of Soldiers.

These principally consist in

- 1st. Intemperance and irregularity.
- 2d. Exposure to heat, cold, and variations of temperature, with or without moisture.
- 3d. Marsh vapour.
- 4th. Contagion or infection.
- 5th. External injury.

Intemperance

Intemperance and Irregularity.

THAT soldiers are addicted too frequently to these causes of disease, has been often a subject of regret, and notwithstanding strictness of discipline, they cannot always be prevented. Especially that degree of them, which though it does not prevent the soldier from performing his duty, and of course not so immediately under restraint, yet is equally certain of occasioning disease. The one more quickly produces illness; the other more slowly, but with equal and even more certain success. The morning dram, is more prejudicial than the afternoon inebriety. By the former, the foundation is laid of stomach complaints, and bad habits are acquired. The appetite becomes impaired. A desire of drink increases. To the morning the forenoon dram succeeds, and so on.

The 45th regiment, when in Grenada, lost in the early part of 1789, a great number of men. This was more singular as the Island was at the time healthy. An inquiry into the causes of it was directed. Among several causes, one was remarkable. It was found, that the common breakfast was a glassful of pure spirits, with a small slice of broiled salt pork, and the spirits were not unfrequently repeated. The regiment had, from the 1st of March to the 13th April following, of the year 1789, ninety-six sick, of whom twenty-six died. The complaint was apparently dysenteric. Those who died were opened: the whole had ulcerated intestines, and fourteen of these abscesses of the liver. Other causes were certainly conjoined to the drinking spirits on an empty stomach; but there is no reason to doubt it contributed largely. The natural tone of the men's stomachs became impaired, and a loss of appetite with indigestion ensued: then a diminution of the natural powers of the constitution, with
wasting.

waſting. Under theſe circumſtances, fatigue, watching, and expoſure to cold and wet, readily produced the abceſſes of the liver, with the dyſenteric ſymptoms of which they died.

Two very ſingular inſtances of the effects of drinking ſpirits, were met with at Barbadoes, which, with the account of their diſſections, are deſcribed by me in the London Medical Journal, vol. vii. p. 33. Another inſtance is related in my obſervations on the means of preſerving health in the Weſt Indies, p. 80. Theſe ſhew the direct effects of pure ſpirits, in producing inflammations, ulcerations of the ſtomach, and death.

Therefore the effects of intemperance may not only directly of themſelves produce death, but always make the body more ſuſceptible of any other cauſe of diſeaſe, to produce complaints of the moſt fatal nature. Hence, no-

thing can be more injurious to the health of a foldier.

Befides, intemperance occasions every fpecies of irregularity. When both are conjoined it is hardly poffible to efcape difeafe. Difafe of body is not all the harm fufained. Affections of the mind are included. Vice becomes predominant ; and the moral character of the foldier is loft.

*Exposure to Heat or Cold, with or without
Moifture.*

Pure heat and cold in any climate, if fteady, and not extremely fevere, feldom produce complaints, efpecially as they are always fomewhat regulated. Indeed it may be faid, they are fcarcely prejudicial to health. When under the conftant and continued exposures to either, in their fevereft degrees, headach, coup de foleil ; froft-bitten, torpor
or

or insensibility, are the affections which arise; but they are singular occurrences.

Variations from heat to cold, and from cold to heat, especially when quickly occurring, are causes inimical to health. The diseases they produce are limited; but they may be fatal, and they are often dangerous. Inflammatory diseases of the lungs and bowels are not unfrequently the consequence. These in the soldier are always very serious diseases; and often fatal.

A familiar fact of the effects of variation of temperature may be mentioned. Troops may remain late in the season on the field, in good health, even when the weather is felt severely cold, in this country until the end of October or beginning of November. But when they go into quarters, warmer situations, or where they have fires, colds, and inflammatory complaints become prevalent.

Therefore

Therefore it is only the extremes of heat or cold, that can be considered prejudicial, while the variations from the one to the other, especially when sudden, even in slight degrees of either, produce diseases, though of a limited nature, yet of a dangerous tendency.

Such variations, combined with wet or moisture, produce diseases of a much more alarming kind, and of a much more general influence. Indeed they never occur, without producing sickness, and if they continue, public attention is attracted, and the season is said to be peculiarly sickly. All classes, and descriptions of people are affected. The soldier is however more liable, on duties of exposure. Otherwise his discipline, by securing more regularity, warm cloathing, and better diet, preserves him.

These variations with moisture in a hot climate, or in warm weather, produce choleras,

leras, or other bowel affections. In a cold one, or in cold weather, rheumatism; colds, pectoral complaints, and in those disposed, consumption.

Marsh Vapour.

THIS is a very common and baneful cause of diseases among Soldiers. The diseases which it produces are intermittent and remittent fevers, and dysenteries, according to the state of the marsh and the weather. It is a melancholy reflection, that this source alone has proved fatal to many Artillery men. It is also a consolatory one, that it may be avoided. There are however situations in the progress of active operations, that men must be exposed to the influence of a swamp; but even then precaution will do much.

The vapour of marshes or swampy ground, is very limited in its effects, as to distance.

The

The exact point is not ascertained. From many facts on the subject, there is no active vapour probably beyond half a mile, or a mile at furthest from its source. The nearer to the marsh, the more certain is the operation of its vapour.

———In the marshy plains
Build not; nor rest too long thy wand'ring feet.
For on a rustic throne of dewy turf,
With baneful fogs her aching temples bound,
Quartana there presides.

———Avoid the mournful plain
Where osiers thrive, and trees that love the lake;
Where many lazy muddy rivers flow:
Nor for the wealth that all the Indies roll,
Fix near the marshy margin of the main.

Armstrong.

Contagion or Infection.

CONTAGION has ever proved a cause of destruction to armies and fleets. Happily
for

for military people as well as others, the means of destroying and of preventing its formation, are, it may be said, successfully understood. By the knowledge of the present day, contagion can only arise, or spread, under absolute inattention and neglect.

Contagion is of various kinds, which shall be enumerated. Small pox, measles, whooping cough, scarlet fever and sore throat, plague, ship or jail fever. All these can only be propagated by those under the disease, or by infected cloaths, &c.; but the last may also be spontaneously produced. It would be unnecessary to enter into any inquiry into the origin of these contagions. It is merely sufficient to state that none of them, so far as is known, can be spontaneously produced, except the ship or jail fever. The circumstances however which facilitate the communication of the whole merit every attention.

The

The contagion of small pox, measles, plague, &c., are even more limited in their active effects than marsh vapour. The facts on this subject, with respect to small pox especially, have been well ascertained. It requires nearly contact to propagate the disease. Doctor Haygarth's publications on this subject will afford much satisfaction.

Various histories have been described of the appearance of the ship or jail fever, when no other source than its spontaneous production, by a combination of well marked circumstances could be traced. Wherever small pox, measles, or plague appears, the source from whence they have proceeded has, so far as I know, been always found.

We shall therefore relate the combination which has hitherto been supposed to produce this very infectious fever. Its name is derived from two of the most common situations in which it has arisen, ships and jails.

But

But it has also appeared, in the low, confined, and crowded houses of the poor.

Depression or dejection of mind, an entire want of cleanliness, a meagre diet, dampness, a stagnation of air without change or succession, are the circumstances, which when combined, produce this fever. At any rate it seldom arises, but under such a combination. When formed it then spreads as small pox, and in this way persons are affected in ordinary circumstances. The time it is necessary, for the combination recited to produce this species of contagion, is not fixed. It no doubt requires a certain period. This however should never be depended upon. The moment such a combination is perceived it ought to be destroyed.

A distinct case of the origin of this fever happened once in the Horse Artillery Barracks at Woolwich about the end of the year 1798.

One man of the Horse Artillery was admitted into the Hospital with a suspicious fever, next day another. This excited inquiry. It was found they came from different barrack rooms. These were followed by other men, amounting in all to eight. Three of whom came from a separate room. The rest from the same rooms. The rooms were visited with the Commanding Officer, and each of them from whence the infected men were received, were found to have entirely different bedding from the rest of the barracks. The Horse Artillery being a corps in constant readiness for service, and whose appointments were always complete, had for convenience of carriage, &c. hammock bedding. The hammocks were rolled up tightly every morning, the moment the men rose; and they were unloosed when they went into them at night. At this time we had had so much and so constant rain, that this bedding had not been aired, or opened for a single day, at least two months. The hammocks were with their
bedding

bedding examined, and the moment they were opened, a very peculiar nauseating smell was perceptible. Immediate steps were taken, and no farther mischief took place. Here, an infectious fever, evidently arose from the confinement of the effluvia of a man's own person, in a time of about two months. That this fever was of an infectious nature, is certain, as the symptoms in all affected were the same, and two or three of them had relapses, which affords one of the characters of this disease. Besides one of the attendants was infected. A familiar instance of the kind now recited, imparts a stronger impression than a more distant or formal one. It has been therefore introduced. More especially as it gives me an opportunity of noticing, the immediate attention, and compliance with the representations I made on the subject.

External Injury.

THE Artillery Soldier is peculiarly liable to many accidents. As a soldier of the line, he is not only exposed to wounds during action, but he has to encounter a number of injuries from the nature of his service. The whole he is liable to, may be reducible therefore, not only to those from the bayonet, sword, musquet and cannon balls, but also to those from the explosion of powder, bursting of shells, mortars and guns, with the accidents from carriage wheels, and during the embarkation and disembarkation of stores, ammunition and ordnance.

*Of the most obvious Means of preventing the
Diseases of Soldiers.*

HAVING pointed out the most common causes of the diseases of soldiers, especially those of the Artillery, we shall next describe the
most

most obvious means of preventing their operation ; or in other words the best manner of preserving health. This will be done more clearly by following the same plan of arrangement, as was followed in the relation of the causes of disease.

Of obviating the Effects of Intemperance and Irregularity.

THESE are partly obviated by strictness of discipline, and keeping the men uniformly employed. This is entirely the business of the Officer. The Surgeon has an advice to give, which is, that, the soldier should have in all situations, a mess breakfast, at an early hour, under the same inspection and direction as his mess dinner. Though this is an essential circumstance, it is not generally adopted. When a soldier takes a morning meal, before he can possibly drink any thing improper, it nearly secures him.

This was remarkably conspicuous in the good effects which followed the change in the 45th Regiment. I would if possible oblige the soldier to have three regular meals a day, breakfast, dinner, and supper. The two former I hold to be indispensable for the preservation of health, and activity.

The soup and boiled meat usually left at dinner, with a little addition, would make a suitable supper. For breakfast, rich gruel with treacle or beer, rice milk, or milk and bread; and in the West Indies chocolate, which is obtained so cheap that it can be afforded. In this country the soldier is often contented with weak tea or coffee. Common mixtures of beer with spirits, or a dram with a bit of bread satisfies him; than which nothing can be more prejudicial. He soon becomes exposed to all the injurious effects of intemperance as formerly described.

Besides

Besides a proper diet at stated times in the day, the soldier should also have stated times of sleep. Regularity in this respect, so far as duty permits, will contribute much to guard against the effects of intemperance, and irregularity in general conduct. A man intemperate and watchful, falls a ready prey to any other particular cause of disease which may present itself.

This is a proper place to observe, that the common time of relieving daily guards, is, especially in many situations, peculiarly unfavourable to health. This is a fact ascertained; but it has been generally overlooked. Guards are relieved in the morning. The men who compose them are awake all day, and they frequently obtain too much liquor. At night they must often be badly prepared for the duties of sentinel. Even if the duty is unobjectionably performed, they are from the watchfulness, and drink of the day, extremely liable to be influenced by the night

L 2

air.

air. In cold and damp situations, they will be attacked with complaints in the chest, and these thus disposed, will end in consumption and death. In hot climates diseases will arise, and if near swamps, agues of a bad kind will be produced. This I have several times witnessed; but I have also had the satisfaction of observing the evil remedied, by the guards being mounted or relieved at the time of the evening parade, in place of the morning.

We may also here introduce the great utility of warm cloathing in exposed situations, especially of the flannel shirt and worsted stockings. The great coat is also indispensable. I remember, it was remarked, that the guard of the 67th Regiment in Grenada had always fewer men than any other falling sick, and this appeared to arise from each man having been obliged to have on a flannel waistcoat next his skin, and worsted socks on his feet. The centinel is apt to lay aside his great coat, which should never be allowed.

Discipline ;

Discipline; three, or at any rate two regular messes a day, and one of them a breakfast; changing the time of mounting guard; and warm cloathing constitute the most effectual means of obviating the effects of intemperance and irregularity.

Of obviating the Effects of Exposure to Heat or Cold, with, or without Moisture.

HEAT simply, may be referred to the sun's influence. When the sun's heat is severe, as in the West and East Indies, some cautions are requisite. The principal of which consist in avoiding or guarding against exposure; in temperate living; and in keeping the bowels more open than ordinary. Unavoidable exposure should be accompanied with the least possible exertion; and the head should be kept particularly cool by the lightest covering. Moderation in living, especially in drinking, should be particularly

L 4

observed.

observed. An open state of the bowels may be accomplished by ripe fruit, cream of tartar, and should these fail, small doses of the Glauber or Epsom-salts.

Cold is guarded against by warm cloathing, exercise, and friction or rubbing of parts much exposed. Here also temperance in living should be pursued. The foldier should always in this and the other case have his breakfast and dinner regularly enforced.

Heat and cold combined with moisture, deserve every precaution, as they are very general causes of disease. Flannel worn next the skin, ought never to be dispensed with. A more generous living is here required. Wine, spirits or porter may be allowed. But their use should be notwithstanding guided by temperance. In these situations it is more necessary to attend to the messing of the men. The breakfast and dinner especially. Here also much benefit would be derived,
by

by the men mounting guard in the evening in place of the morning. In these situations the use of the great coat ought to be positively enjoined, likewise the flannel waistcoat or shirt next the skin, the socks or worsted stockings. When a man is relieved in wet weather, especially if he has been near a swamp, a wine glassful of spirits may be judiciously given, and the good effects would be increased, if it contained some Peruvian bark, or garlic.

Of obviating the Effects of Marsh Vapour.

THE same means, which guard against heat, cold, and moisture, are equally serviceable as preventives against the vapours of marshes or swamps. But no precaution can be trusted. An actual removal from the neighbourhood of the marsh, should, in all possible cases, quickly take place. Where this cannot be from the nature of the service accomplished,

plished, the clearing and draining the marsh should be attempted.

When we are in the neighbourhood of marshes, and to leeward of them, we should have that side of the house or hut which faces them, shut up as close as possible, and the door and windows made in the opposite side. If an Officer has a marquee, the front of it should be placed from the marsh, and the back part towards it: the same thing ought to be observed in the encampments of the men. In these situations, wood fires between the marsh and the hut or tent, twice or thrice a day, particularly in the morning and evening, and frequently made during the night, would be attended with advantage. As also would probably be the daily use in the apartments, of the vapour from manganese, salt, water, and oil of vitriol, or the sulphuric acid, as formerly described.

In

In such situations, men, when they are relieved from guard, should be examined, and the slightest complaint reported. By which many would be saved from a severe illness by the timely use of an emetic, cathartic, and a few doses of bark. This merits every attention, from the Officer on duty, and he ought to be responsible for its execution to his Commanding Officer.

Of obviating the Effects of Contagion or Infection.

CONTAGION has been shewn to be of various kinds, and that in whatever shape it appears the most fatal consequences are produced, and to none more so than to soldiers and sailors. The mortality occasioned by small pox, plague, and ship or jail fever, is incalculable. To prevent their propagation and formation, becomes therefore an object of the most important concern to both Officers and Surgeon ;

Surgeon; but the prevention depends more on the attention and exertion of the former.

When small pox, measles, or any other infectious disease appears in barracks or camps, the persons infected should be immediately removed, to a separate and distant part. The most convenient accommodation is to have, in Hospitals, detached rooms, or wards kept for the purpose. This is the manner at Woolwich, and these diseases do not spread. The bedding as well as the cloaths should accompany the sick, when the treatment already mentioned in the description of the hospital, effectually destroys the contagion.

There is an order that no women or children who have not had the small pox, can embark on board of transports. This is absolutely proper. Should however, a case of small pox unfortunately occur on board, the whole of the soldiers and crew of the vessel should

should be examined, and those who may not have had the disease, inoculated. The infected should always be separated from the rest, by running up a partition, and intercourse prevented. This may even prove sufficient to prevent communication, as it requires nearly contact to produce the disease; but the general examination and inoculation of those who may not have had the complaint ought never to be dispensed with. The bedding of the infected, and the cloaths the person has had immediately about him, ought to be thrown overboard. The vapour from manganese and salt, moistened with water, and extricated by the acid of sulphur, ought to be used.

Small pox has been the scourge of mankind. Inoculation has lessened its destruction. The cow pox is likely to diminish it further. But Parliament should interfere. Regulations might be adopted and legally enforced, which would soon exterminate this disease altogether:

together and not only small pox but measles, and the whole tribe of infectious diseases. This plan, however, would require the co-operation of all nations, which can hardly be expected. The Parliament of this country has it in its power, if not to exterminate finally, at least to diminish the extent of the small pox, so as to deprive it of its comparative fatality. This is the period to make the attempt, from the very auspicious prospects of the mildness and safety of the cow pox. Indeed, should the cow pox, as so distinctly and circumspectly recommended by Doctor Jenner, continue equally promising, it will in time accomplish every thing of itself.*

But to return from this digression. Besides the small pox ; measles, and scarlet fever, often appear among soldiers, and when they do, the sick ought also to be immediately removed to separate places, or to the hospital. Their bedding and cloaths to be treated in a
similar

* See the Remarks on the Hospital Abstract.

similar manner. It is hardly necessary to mention the plague, as it now, from the extreme care taken to prevent its importation, does not appear. Should it however, unfortunately occur, the same measures are to be pursued.

The itch and venereal disease are also objects of preventative attention. Recruits having the itch are always detected by the Surgeon. It sometimes however happens among old foldiers, by accidental infection. When detected, the man should be sent to the hospital, with all his bedding and cloaths. The venereal disease is generally acknowledged; but it is sometimes concealed, and when it is so it becomes a more obstinate disease. Neither of these are fatal. The former, even the most obstinate cases of it, may be cured in a few days. The latter is an object of more serious concern, as the cure though certainly and safely accomplished, requires time; and this with its great frequency becomes

comes highly detrimental and expensive to the public service. A regulation, stopping the man's pay and allowance entirely, while in the hospital with the venereal disease, and applying the balance, after settling the hospital account, to the service of government, I have often thought would prove a powerful check. This would be quite reasonable, as the man solicits his own disease, and not unfrequently soon obtains a reproduction of it, by means of his savings in the hospital.

The kind of contagion which demands the greatest attention, is that of the ship or jail fever. We have seen that this is unlike the others, as they are not produced, but only propagated from one affected person to another. This however has been shewn to be produced under peculiar circumstances. The destruction and prevention of the occurrence of these circumstances becomes therefore the object of high consideration. After the contagion is formed, the disease then must fall
under

under the same measures as the other contagious diseases to prevent it from spreading.

It is necessary to bring to remembrance, that the want of cleanliness, ventilation, the free admission and succession of fresh air, combined with want of proper nourishment, depression of spirits, and damp air, are the circumstances, which have been supposed as probably never failing to produce jail or ship fever. To such production it may not be requisite to have all these conjoined. We have mentioned a case, where several of them certainly did not exist, namely the origin of the disease in the Horse Artillery barracks, which was chiefly referable to the state of the hammocks.

But in considering the means of obviating the formation of this contagion, it is indispensibly incumbent, to direct the attention to the whole ; and the means employed, must
regard

regard each circumstance simply and combined.

Cleanliness and *Ventilation* of rooms, or apartments become first in order. The necessity of them, as well as the manner, have been already described, so far as the management of the sick are concerned. Very little more remains to be said, as the circumstances there related will apply to men in health, in barracks, and transports.

In barracks and transports, cleanliness and a constant succession of fresh air, can be more readily and more safely applied, than in an hospital, therefore any neglect more inexcusable.

The bedding of the barrack room, the mens' cloathing, and knapsack, should be aired at least once a week, it cannot be done too often, and in cases where the weather prevents it, cords should be fixed across the room,
and

and the bedding and cloaths fufpended over them, while the windows and doors remain open. In this way even bad weather fhould not prevent the airing of cloaths.

The rooms fhould be fcrubbed and fweept out daily, and the windows and doors frequently opened. No weather fhould prevent the admiffion of external air. Barracks might be much improved by the application of Mofen's principle of throwing in warm atmospheric air.

The bedding of all barracks ought to be palliaffes filled with ftraw. The blankets ought to be changed and fcoured, at leaft once a year. The bedstead ought to be of wood, and fo conftituted as to take readily to pieces and to be wafhed. The ftraw fhould be changed every two or three months. The oat ftraw is the beft. The bedstead fhould be feparated and wafhed, every time the ftraw is changed. The Spanish platform conftituc-

M 2
tion,

tion, as adopted in the convalescent barracks, furnishes a good model for a bedstead to all barracks.

In barracks, rooms become occasionally empty ; at such times they should undergo a thorough cleaning, and a thorough ventilation. If any unpleasant smell is perceptible, they ought to be fumigated and white washed. Indeed, when barracks are constantly occupied, it would be proper to make some sort of accommodation for forty-eight hours, to allow the rooms to be so treated in succession, until the whole was accomplished. This should be performed at least once in three months.

With respect to the personal cleanliness of the men, it is unnecessary to propose any directions, as that is well attended to in our service, indeed so are the other particulars ; but being of great importance, we could not avoid noticing them. There is one point
however,

however, in personal cleanliness, entirely overlooked, which is washing the feet. A soldier ought to be seen do this at least once a week.

In transports, the preceding points deserve greater attention than in barracks, as in them more people are generally crowded together ; there are also women and children, and the weather may often absolutely prevent a free ventilation. From which, this fever often originates in transports. In such situations therefore, an Officer must be unceasingly vigilant, he must watch every favourable opportunity of obviating the evils of his situation.

The manner of admitting a constant succession of fresh air, in transports, in any weather, where a fire can be used, has been already mentioned, and which we think merits adoption. In ordinary cases, whenever the weather permits, if it is only for an hour, or even half an hour or less, every person,

man, woman, and child, should be upon deck. In precarious weather, opening the hatches, and bringing every body on deck without the cloaths and bedding will answer a good purpose. In more settled weather a complete airing can be directed. In every state of weather the decks inhabited should be scrubbed and swept. Washing these decks is perhaps not to be frequently performed. Indeed, it may prove sufficient, if they are scrubbed and well scraped every day. Dampness may be prejudicial. The 'tween decks do not dry readily. On the whole, I think washing should be dispensed with, while troops remain on board. The moment they land, washing, scrubbing, and ventilation should be complete: and in all cases where time and circumstances will allow, fumigation with the sulphur and nitre ought to be performed.

Proper nourishment, is necessary to guard against not only the formation, but the spreading

spreading of contagion. Intemperance and irregularity prevent the application of nourishment. A well regulated mess is essential in the œconomical management of a foldier. It not only will secure him against disease, but enable him to perform his duty with activity. The dinner mess is always very strictly regulated. Reasons have been already given why a breakfast mess is of the greatest service. We are of opinion it should be under the same strictness of regulation as that of the dinner. The liberal allowances by Government granted to the foldier, are completely sufficient for all his wants, and are equal to afford him the fullest nourishment. But the application of them requires nicety. We urge only the necessity of a breakfast and dinner mess, in order to preserve health. If the Officer sees its propriety with the same force, his judgment will direct the application.

These comprehend the essential objects to be kept constantly in view, for the purpose of guarding against the formation of the ship or jail fever. From the fact related, the use of hammocks must be again mentioned. It is only however necessary to say, as they may under certain circumstances become extremely prejudicial, they ought never to be employed; but in situations when it may be absolutely requisite. In such cases, they ought never to be rolled up with their bedding, they should be kept spread out, and with their bedding frequently aired, in all kinds of weather, in the manner we have proposed for common Barrack bedding in wet weather.

Of obviating the Effects of external Injury.

IN all cases of this kind, the soldier should have the assistance of the Surgeon as early as possible. He ought to be removed to the Hospital

pital in the easiest manner. A bier seems to be the best calculated for the purpose.

In accidents when a bone is broken, the limb should be laid in the posture giving the least pain, until the Surgeon arrives.

In accidents, accompanied with an effusion of blood, if on the leg under the knee, the tourniquet should be applied above the knee, or should there be none at hand, a handkerchief may be tied tight in the same place, and this may be made more secure by a drumstick introduced under it obliquely and twisted. The Master of the Artillery band in this manner, prevented bleeding from the fore arm of a man at Waterdown camp in 1793, who had it shot away. I saw the man about fifteen minutes after the injury was sustained, and I found the handkerchief and drumstick had been applied above the elbow, and all was very secure. The man was carried to the distance of a mile in perfect safety,

no

no hæmorrhage ensued. The limb was amputated, and he did well.

A tourniquet of an easy and effectual application, which could be used by any soldier, was much wanted. I wrote to Mr. Savigny, (the Board of Ordnance's Instrument maker) who came to me, and I shewed him one or two tourniquets of this kind; but which appeared to me to be defective. After some conversation with him and Mr. Cruickshank on the subject, one was fixed upon, a model was brought down, and some alterations were suggested; and thus Mr. Savigny's field patent tourniquet was made. The Master General and Board with their accustomed attention and compliance with every thing for the good of the soldiers, ordered a supply equal, to distributing a tourniquet to every Non-commissioned Officer of Artillery going on actual service, with directions to instruct him in the manner of application. This
has

has been done. No Officer should be without one or two of them in his pocket.

The tourniquet should be applied as has been said, in injuries of the leg above the knee; and of the arm above the elbow. When the injury is above the knee, or elbow, the tourniquet should be applied above it, in the former case at the top of the thigh, in the latter as near the arm-pit as it can be conveniently applied.

HAVING thus given a short account of the Hospital at Woolwich, and of the general means of preserving health, as concisely as it could be done, with any distinctness, we shall conclude by recommending to the Officer, who may wish for more ample information on the subject of hospitals, of the causes of military diseases, and the steps to be taken to obviate them, to peruse the following books.

LIND

LIND *on Fevers and Infection; and his Advice to Europeans in Hot Climates.*

PRINGLE'S *Observations on the Diseases of Soldiers.*

MONRO'S *Observations on the Means of preserving the Health of Soldiers.*

BLANE *on the Diseases of Seamen.*

CHISHOLM *on the Malignant Fever of Grenada, which contains an Account of every leeward Island in the West Indies, and of the Means of preserving Health in them.*

Scurvy has not been mentioned as a disease to which soldiers are commonly liable. Indeed it cannot happen, except the general means pointed out to prevent the other diseases of soldiers are neglected. It may now be considered as a rare disease. The extreme care of Government to supply fresh vegetables

tables and fruit to their fleets and armies, while the contributing causes of the scurvy are assiduouſly obviated, ſufficiently account for it. On this diſeaſe, beſides what is related in the preceding books, the minute hiſtory of it given by Doctör Lind, and the additional hiſtory, with the means of cure, by Doctör Trotter, may be conſulted.

FINIS.

T. Gillet, Printer, Salifbury-Square.

